At present, data suggests that attention-deficit/hyperactivity disorder may be more prevalent in North Carolina than other states, but whether we are properly identifying and treating cases, in childhood and adulthood, is murky. Much innovative work to this end is being done in North Carolina, but more is needed.

Attention-deficit/hyperactivity disorder (ADHD) exists in North Carolina as it does elsewhere: it emerges in childhood, but tends to persist across adolescence and into adulthood, as documented in a recent long-term follow-up study of hundreds of children diagnosed with ADHD suggesting that 60% have clinically significant symptoms persisting at least to their mid-20s [1]. It impairs functioning in many domains, including school achievement, work, physical health and safety, relational satisfaction, and other outcomes [2]. There are many facets of this disorder that could be focused on, but herein I have organized my commentary to focus on a) the apparent scope of the “ADHD problem” in our state, b) how we appear to be coping with that in assessment and intervention efforts, and c) related thoughts that also highlight innovative research and intervention directions.

Scope of the Problem: Relative Prevalence

Various studies can inform our understanding of ADHD prevalence in North Carolina. The National Survey of Children’s Health (NSCH) periodically documents the physical and emotional health of children in the United States, is one of the Centers for Disease Control and Prevention’s (CDC) primary benchmarks, and provides data at both the national and state level [3, 4]. Data from the NSCH indicates that by parent report of both a child’s lifetime and current diagnosis by a health care provider the children of North Carolina have had elevated rates of ADHD across the past two decades [3, 4]. Using 2011 data as a reference, North Carolina ranked seventh in the nation on both of these metrics, with 14.4% of children reported by parents as having a lifetime diagnosis and 11.6% a current diagnosis.² Mirroring the national trend, these percentages climbed in North Carolina across the three most recent published reports (2003, 2007, and 2011), from the low of 9.6% lifetime diagnosis in 2003 [3].³ A recent population study in 17 elementary schools in Johnston County utilizing data from teachers and parents estimated that 15.5% of students met criteria for current ADHD [6], providing additional evidence that this is a relatively common problem for children in North Carolina and exceeding the prevalence estimates of the Diagnostic and Statistical Manual of Mental Disorders (5th ed., DSM-5) [7]. All published data sources suggest that ADHD is more prevalent in boys than girls [2].

While prevalence statistics are easy to obtain for children, data regarding adults in the United States, and in North Carolina specifically, are relatively sparse. The National Comorbidity Survey Replication (NCS-R), completed in the early 2000s, is still the most robust source, producing a national estimate of 4.4% [8]. As in childhood, ADHD occurs more frequently in adult men than adult women, but the disparity is less dramatic [8]. Kessler and colleagues’ estimate contrasts the statistics in children, but notes that other research indicates that it is still likely a majority of affected children continue to experience significant symptoms and impairment as adults [1, 9] and, indeed, that even sub-threshold cases may be associated with clinically significant impairment [10]. While specific statistics regarding North Carolina are not currently published, it seems likely to me that, as in children, our adult population either mirrors or exceeds these ADHD prevalence benchmarks.

ADHD Assessment and Intervention in North Carolina

While a full authoritative review is impossible, I think it is possible to infer a few things from the data and from recent developments in the field. First, I believe it is important to consider the implications of the prevalence estimates for our understanding of ADHD. Second, I believe it is important to consider the implications of the prevalence estimates for our treatment of ADHD. Finally, I believe it is important to consider the implications of the prevalence estimates for our research on ADHD.

For reference, the national averages for these statistics were 11.0% (lifetime) and 8.8% (current); Kentucky had the highest prevalence (18.7% and 14.8%, respectively), and Nevada had the lowest (5.6%, 4.2%; [3]).

Note that an online query of 2017-2018 NSCH data indexing the rate of current, parent-reported ADHD in the United States indicated a decline in North Carolina (10.3%) and general stability nationally (8.7%) [5].
is important to reference here some important assessment and intervention standards for ADHD. Current American Academy of Pediatrics (AAP) guidelines for child and adolescent patients generally emphasize using multiple sources of data (eg, self [for adolescents], parent[s], teacher[s], and/or direct behavioral observation), standardized instruments, documentation of impairment in multiple domains of functioning, and rule-outs of other conditions or circumstances that could be driving symptoms [11]. They clearly signal that age of patient is relevant to treatment planning, and note that strong evidence exists for the benefits of well-titrated and managed psychostimulants as well as behaviorally oriented therapies that involve parents and/or schools. These current AAP recommendations generally concur with the broad literature regarding empirically supported assessment [12-14] and intervention [15, 16].

Unfortunately, there is very little concrete, published information that either supports or disputes that medical or mental health professionals in our state, specifically, are following these sorts of standards, or even how “well” we are doing at identifying who has ADHD and attempting any sort of intervention at all. Rowland and colleagues note in their Johnston County sample that 42% of the children identified as having ADHD had no prior diagnosis, and that 27% of those with an existing ADHD diagnosis were not currently taking medication to address it, possibly suggesting some significant shortcomings [5]. Further, data from a pilot study by the same team suggests that while Black and White children were diagnosed with ADHD at roughly comparable rates, the former were significantly less likely to be taking medication [17]. Extrapolating from other data seems dicey. For instance, publicly available data suggests that the percentage of students in public K-12 schools in North Carolina who receive special education services under the Other Health Impaired designation (where ADHD fits, per the Individuals with Disabilities Education Act) likely falls far short of the prevalence statistics (in 2017: 35,133 of 1,533,180 students, = 2.3%) [18]. This might initially be seen as evidence of poor screening and assessment. However, there is no telling how many received less formal intervention, had adequately managed ADHD via medical or psychosocial therapies, or had ADHD but still managed to cope well enough in school to not draw concern.

General Commentary

Anecdotally, given my experience as a licensed psychologist specializing in ADHD and practicing in Boone, a researcher focusing on young adults with ADHD, and a professor who has conferred with numerous students with related experiences, I suspect we are falling somewhat short in assessment and intervention. There are some aspects of this that probably have very logical roots. For instance, while it is common knowledge among health professionals that ADHD is not a disorder that always presents with prominent hyperactivity-impulsivity, it is my impression that some children—particularly girls—who have clinically relevant inattention without hyperactivity are fairly often not identified until late in the game (ie, high school or later), and this can have negative and long-lasting consequences. However, in an era in which teachers are increasingly expected to do more with less, where physicians face economic and other workplace realities that may push efficiency over lengthy consultation, where many parents have little flexibility in terms of time or attention due to myriad demands, highly elevated inattention alone may not rise to the level of concern that motivates allocating precious resources for assessment and follow-up, particularly if impairment is relatively mild.

On the intervention side, one basic aspect on which I believe we fall short is psychoeducation. This is part of effective treatments for older adolescents and adults with ADHD, such as manualized cognitive behavioral therapy (CBT) [19, 20]. An informed client is an empowered client, one likely to have more realistic beliefs and attributions and make better behavioral choices. However, in my experience with college students with ADHD this is often sorely missing. They lack an understanding of ADHD and how it is likely to affect their lives, and what seems to follow is failing to procure accommodations or other educational or psychotherapeutic assistance, discontinuing prescription medication, diversion of the same to unaffected peers, and other maladaptive behaviors. Again, this may in practice be difficult to counter. ADHD is most commonly diagnosed in childhood, in primary care, and there is limited time to educate parents about the nature of the disorder, much less to provide developmentally appropriate information to children. Parents and other adults who support these kids as they grow into teens and young adults (eg, physicians and counselors, teachers, and others in schools) also have many fires to tend to, and providing education about ADHD’s effects and how they may play out over time can, logically, fall through the cracks.

Obstacles and Future Opportunities

While it may seem to the reader at this point that I have a pessimistic view of how well we are coping with ADHD in North Carolina, I want to counter by writing about the opportunities for the future and the important work that has been and continues to be done in our state.

First, one of the obstacles to adequate care for those with ADHD is a dearth of well-trained behavioral health specialists (ie, psychologists, clinical social workers, counselors) who can implement the empirically supported parent- and school-based behavioral interventions that are indicated. This is a lamentation that I often hear in Boone, and I imagine it is particularly problematic in other rural areas of the

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c Per reports of students aged 6-21 in “By LEA (6-21)” and “6-21 by LRE, Disability, Race and Sex” documents for 2017 indexed at https://ec.ncpublicschools.gov/reports-data/child-count/reports/december-1
that also facilitates novel treatment outcomes research

many others), operates another exceptional specialty clinic

that was conducted in the late ‘90s (see [25], among

groundbreaking Multimodal Treatment for ADHD (MTA)

 Parent training classes could be offered during the evenings, and with dedicated space, telehealth consultation and follow-up with families and schools could become a reality. Medical practices could make such desires known to master’s and doctoral-level programs in their vicinity, which might then prioritize training options that would benefit their trainees and the community alike.

As for school-based interventions, multiple directions are being pursued that have potential to improve outcomes for those with ADHD. Psychologists at Appalachian State University, along with professionals in other allied disciplines, have established Assessment, Support, and Counseling (ASC) Centers in local high schools [21]. ASCs address issues ranging from problems of life to severe mental illness and suicidality, taking intervention to the patient; for adolescents with ADHD, such a venue might provide psychoeducation and cognitive behavioral intervention that would facilitate better adjustment in their transition to adulthood. Schultz, a professor at East Carolina University, has been involved in the upward extension of the middle-school-focused Challenging Horizons after-school program for children with ADHD [22], with promising initial results that suggest application in North Carolina high schools may be indicated [23]. At the University of North Carolina at Greensboro, Anastopoulos and colleagues run a community-based ADHD specialty clinic and also have implemented the Accessing Campus Connections and Empowering Student Success (ACCESS) program, which employs empirically supported psychotherapy and skills training to bolster the success of college students with ADHD [24]. Duke University Medical Center, one of the core data collection sites of the groundbreaking Multimodal Treatment for ADHD (MTA) that was conducted in the late ‘90s (see [25], among many others), operates another exceptional specialty clinic that also facilitates novel treatment outcomes research (eg, [26]).

To conclude, something that I think transcends my own biased and imperfect perspective into truth is this: we have work yet to do to identify, understand, and treat ADHD. There are many who are progressing with that work, but we could use reinforcements. Are you in?

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