Background

• Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that impairs an individual’s social, communication, and behavioral skills (APA 2000).
• These impairments can significantly impact an individual’s mental health (Goodwin 2005).
• Adolescents are especially vulnerable to mental health disruptions during the transition through puberty due to the potential disjunction of physical and cognitive systems maturing at different rates (Steinberg 2005).
• The goal of this study is to investigate patterns in anxiety and depression rates across individuals with ASD during the different stages of puberty.
• We expect to find an increase in anxiety and depression rates in adolescents and individuals who are in the early, mid, late, and post stages of puberty relative to those who are pre-puberty.
• Additionally, we will compare rates of anxiety and depression in children with ASD to their unaffected siblings as an environmental control.
• We expect anxiety and depression severity to be higher in children with ASD compared to their unaffected siblings.

Methods

Participants: 155 children (65 females, 90 males) with a confirmed diagnosis of autism confirmed via ADOS-2 and ADI-R and 55 unaffected siblings (32 females, 23 males) participated in the study. All participants were 8-17 years old and had a verbal IQ over 70.

Participants were categorized based on parental rating of pubertal stages ranging from 1 (not started) to 4 (seems complete). To compute scores for males, the questions about body hair growth, voice change, and facial hair growth were used. To compute scores for females, the questions about body hair growth, breast development, and menarche were used. Answers to these questions were summed, and these totals were used to divide children into pubertal categories. Initial categories were based on a modified version of the Crockett 1988 criteria.

Pubertal Development Scale (Crockett 1988)

• A survey completed by a child or their parent to measure pubertal development. Such an item compiles the child or their parent’s responses based on their perception of the child’s developmental stage in various domains, such as pubertal development, social, and educational milestones.

Anxiety/Depression Scores on the CBCL within each pubertal group

There were no significant effects of pubertal raw scores and prevalence of depression (r=0.065, p=0.42) or anxiety (r=0.110, p=0.17).

Questions:

1. Is there a correlation between raw pubertal score and rates of anxiety and depression? Correlations were run between Pubertal Development Scale Raw Sum Scores and Anxiety and Depression.

2. Is there a relationship between pubertal groups and prevalence of anxiety and depression in individuals with ASD? A one-way ANOVA was run comparing pubertal groups on anxiety and depression prevalence using reported diagnoses on the Medical History Form.

3. Is there a relationship in anxiety and depression severity between ASD children and unaffected siblings? Independent T-Tests were run between ASD/US children and Anxiety/Depression Scores on the CBCL within each pubertal group.

Discussion

• Children in the late-pubertal group had significantly higher prevalence of depression compared to children in the early-pubertal group, suggesting that as children with ASD develop they may be more susceptible to becoming depressed than their siblings without ASD.
• Children with ASD had a significantly higher severity of depression than the US group regardless of pubertal stages, suggesting that children with ASD are more susceptible to becoming depressed than their siblings without ASD.
• ASD children in the pre, early, and post pubertal groups also had a significantly greater severity of anxiety compared to their siblings.
• Taken together, the study suggests partial supports for both of our hypotheses. We expected to find increased rates of anxiety and depression for children going through or having completed puberty compared to individuals in the pre pubertal group. Although we did not find any significant differences in our pre pubertal group, we did find individuals who were in the later stages of puberty to have a higher prevalence of depression. This is in line with the earlier stages of pubertal development. Additionally, we expected to see higher severity of depression and anxiety in ASD children compared to their unaffected siblings. We found that ASD children have significantly higher prevalence of depression than unaffected siblings in all 5 pubertal categories and higher severity of anxiety in 3 of the 5 pubertal groups.
• Pubertal development was significantly correlated with both age and verbal IQ, meaning the older children tend to have higher verbal IQs and be in the later pubertal stages. Separating the effects of age/experience from the biological effects of puberty is challenging.
• Overall the findings for this study could aid in understanding the relationship between mental health and pubertal development in children with ASD.