

# **Investigating the associations between ADHD symptomology and chronic illness: cardiovascular disease and diabetes mellitus**

<sup>1,2</sup>Michael Vine, <sup>1,2</sup>Ty Lees, <sup>2</sup>Najah Nassif, <sup>2</sup>Ann Simpson, <sup>1,2</sup>Sara Lal

<sup>1</sup>Neuroscience Research Unit and <sup>2</sup>School of Life Sciences, University of Technology Sydney, NSW.

Attention-deficit/hyperactivity disorder (ADHD) is a prevalent mental health disorder affecting both children and adults, although a large population may remain undiagnosed. The autonomic nervous system (ANS) is vital in the maintenance of functions affected by ADHD, therefore a relationship may exist between ADHD and ANS dysfunction. Furthermore, the ANS has key roles in the cardiac and metabolic systems. Heart rate variability (HRV) is a prevalent method of measuring ANS function and has been used to assess cardiovascular disease (CVD) and metabolic risk. As there have been no significant studies of HRV and/or DM in adult ADHD this study aimed to address this research gap.

This exploratory study recruited participants from the general population. 41 participants were recruited (20 male: 21 female; mean age=28.98±11.43). ADHD symptoms were assessed using the Adult ADHD Self-Report Scale. HRV parameters (low frequency/LF, high frequency/HF, LF:HF ratio and total power/TP) were assessed via a 3 lead, 10-min resting electrocardiogram. Blood glucose levels and glycated haemoglobin measurements were taken using the finger prick method. Preliminary data has been collected. Mean inattentive ADHD subtype scores=15.38±5.83, mean hyperactive/impulsive ADHD subtype scores=14.41±5.51 (both with maximum scores of 36) and mean combination ADHD subtype scores=29.79±9.81 (maximum score=72). Mean blood glucose level=5.27mmol/L±0.61 and mean glycated haemoglobin=5.0%±0.38%. Preliminary data has shown no significant correlations between combination and inattentive ADHD, and dependent variables. Positive correlations were identified between hyperactive/impulsive ADHD and LF HRV ( $r=0.324$ ,  $p=0.044$ ) and TP ( $r=0.360$ ,  $p=0.025$ ). Statistical analysis is presently underway.

Should associations be found between ADHD and the proposed chronic diseases, and further research (involving clinical sample groups and controls) supports these associations, diagnosed individuals should be monitored for CVD and DM risks. Implications also include encouragement of suspected ADHD individuals to seek early formal diagnosis and treatment, and the inclusion of HRV as an objective measurement in the assessment of ADHD.