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## ASSOCIATION BETWEEN WORKING MEMORY SPAN, BODY MASS INDEX AND GENDER AMONG ADOLESCENTS IN MAHARAGAMA EDUCATIONAL DIVISION

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### ABSTRACT

Working memory involves temporarily storing as well as manipulating information to carry out complex cognitive tasks such as reasoning, comprehension and learning. Recent studies have found that being overweight/obese is associated with impairment of cognitive functions. A cross sectional study was carried out to assess the association of gender and body mass index (BMI) on working memory among a group of post Advanced Level (A/L) students in Maharagama Educational Division. Students who have sat for the A/L examination for the first time in 2014 with a BMI of  $>18.5\text{kg/m}^2$  were included in the study. Working memory was assessed through computerized visuo spatial working memory task (VSWM) and verbal working memory (VWM) task. Independent sample t test and Spearman correlation coefficient were used to assess the significant difference and correlation respectively and the significant level was kept at  $p < 0.05$ . Study sample consisted of 102 adolescents with a mean age of  $19.4 \pm 0.5$  years of which 51% were females. Mean BMI of the study sample was  $22.4\text{kg/m}^2 \pm 2.44$  where 51% of them were obese/ overweight. When compared with mean BMI of females, males had a significantly higher mean BMI ( $23.5\text{kg/m}^2 \pm 2.50$  vs.  $21.4\text{kg/m}^2 \pm 1.94$ , and  $p < 0.001$ ). Mean scores of VSWM and VWM in the study sample were  $30.0 \pm 14.61$  and  $3.4 \pm 1.14$  respectively. Mean scores of males were lower compared with females in VSWM task ( $23.8 \pm 5.21$  and  $36.0 \pm 17.95$ ) and in VWM task ( $2.8 \pm 0.96$  and  $4.1 \pm 0.91$ ). Both scores were statistically significant ( $p < 0.01$ ). A negative correlation was found between BMI and the VSWM and VWM scores ( $r = -0.29$ ,  $p = 0.002$  and  $r = -0.06$ ,  $p = 0.5$  respectively). But only the VSWM score was significantly correlated with the BMI. It can be concluded that the females had better performance in both visuospatial working memory and verbal working memory tasks than males, while visuospatial working memory showed a significant negative correlation with the BMI in the study sample.

**Keywords:** Cognitive Functions, Working Memory, Obesity, Overweight, Adolescents

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