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Early Chronotype Favors Appetite and Reduced Later Day Caloric Intake Among Adults with Metabolic Syndrome

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Late chronotype is linked to obesity and metabolic syndrome (MetS) risk. However, it is unclear if chronotype impacts caloric intake throughout the day in relation to appetite. **PURPOSE:** Test the hypothesis that early (EC) versus late chronotype (LC) has healthier appetite perceptions in relation to less food intake. **METHODS:** Adults with MetS (ATPIII criteria) were categorized into EC (n=22, 19F, MEQ=63.8±1.0, 53.4±1.2yr, 36.4±1.0kg/m^2, 22.8±0.9ml/kg/min) and LC (n=30, 25F, MEQ=47.3±1.4, 55.7±1.4yr, 37.1±1.0kg/m^2, 21.9±0.6ml/kg/min) based on the Morningness-Eveningness Questionnaire (MEQ). A visual analog scale was utilized during a 120min 75g OGTT at 30min intervals to assess fullness, hunger, and desires to eat. Three-day food logs were averaged for dietary analysis (ESHA Food Processor). Resting metabolic rate (RMR; indirect calorimetry), aerobic fitness (VO_2max), body composition (DXA), and fasting leptin were also measured. **RESULTS:** Age, body composition, fitness and RMR were similar between EC and LC. While total dietary intake did not differ, EC ate fewer carbohydrates (CHO) at lunch (50.68±5.79 vs. 69.14±6.87g, *P*=0.05) and more protein (22.62±1.7 vs. 16.94±1.4%, *P*=0.01) than LC. Further, EC compared to LC, had lower caloric (197.3±55.5 vs. 375.3±57.9kcal, *P*=0.03), protein (5.1±1.2 vs. 10.9±2.0g, *P*=0.03) and fat (*P*=0.08*)* intake during afternoon snacking. Dietary fat was lower in EC than LC (31.8±2.7 vs. 39.0±2.3%, *P*=0.05) at dinner, and EC consumed more CHO (43.9±3.4 vs. 33.5±2.1%, *P*=0.01). Early phase appetite perception of the OGTT did not differ between groups. However, during the late phase, EC had higher feelings of fullness $AUC_{60\text{-}120min}$ (2510.0±292.1 vs. 1499.4±249.5mm, *P*=0.01) and reduced desires to eat sweet (5103.5±179.0 vs. 4357.2±259.8mm, *P*=0.03), salty $AUC_{60\text{-}120min}$ (*P*=0.07) and fatty $AUC_{60\text{-}120min}$ (*P*=0.06) foods. Fasting leptin was associated with higher desires to eat salty foods AUC_{120min} (r=0.41, *P*=0.02) while total energy intake correlated with higher lean mass (r=0.32, *P*=0.04) and lower body fat % (r=-0.34, *P*=0.03). **CONCLUSION:** EC have favorable appetite and lower caloric intake later in the day that resemble a low-fat dietary pattern compared with LC. Future work should consider meal timing among chronotypes for weight management.

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