J19 - Does electronic cigarette use adversely affect cardiac autonomic function?

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Introduction: tobacco cigarette (TC) smoking is a predominant risk factor for cardiovascular disease and a leading preventable cause of death (Kondo et al., 2019, Circ J, 83, 1980-1985). Electronic Cigarette (EC) use has increased significantly in recent years (King et al., 2015, Nic Tob Res, 17, 219-227), mainly as it is considered a safer alternative to TC. A low heartrate variability (HRV) is an independent marker of adverse cardiovascular morbidity and all-cause mortality (Fang et al., 2020, Bio Res Nur, 22, 45-56). TC smokers have a lower HRV, and similar responses have now also been observed in EC smokers (Arastoo et al., 2020, Am J Physiol Heart Circ Physiol, 319, 262-270). However, the influence of cognitive / psychological stress on HRV in TC and EC users remains unexplored. As such, this study aims to assess the impact of cognitive stress on Time and Frequency domain measures of HRV. Methods: upon receiving ethical approval, HRV data was collected through electrocardiogram (ECG) recordings of healthy controls (HC), TC and EC smokers which were recorded using lead II ECG at 1000 Hz on LabChart during periods of rest (5 min) and cognitive stress (serial subtraction; 5 min). Time and frequency domain measures of HRV were assessed with LabChart. Data will be compared between groups using one-way analysis of variance (ANOVA) and two-way mixed methods ANOVA as appropriate. Conclusions: we hypothesise that EC smokers will present similar impaired autonomic function and reduced HRV as TC smokers during rest and cognitive stress in comparison to HC.

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