A Study of Effect of Stressors and Heart Rate in an Academic Environment

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INTRODUCTION

Heart rate (HR) is one of the most basic vital signs and has been extensively correlated to stress as an exacerbating factor. Heart rate is a result of the brain innervating the heart through the autonomic nervous system. The autonomic nervous system is comprised of both the sympathetic and parasympathetic divisions determine the HR. The sympathetic and parasympathetic divisions are working in homeostasis with each other and the interaction between the two is expressed in heart rate variability. Medical students exposed to stressors such as examination experience physiological triggering of the autonomic nervous system which leads to an increase in sympathetic activity subsequently leading to an increase in heart rate. Stress levels, heart rate and the quantity of tobacco, as well as caffeine and alcohol consumption are believed to be increased due to academic stress. The comparative observational experiment at the St. James School of Medicine allowed for examination of MD1-MD4 attending the Saint James School of Medicine in Anguilla, British West Indies. Prior to beginning the study, all volunteers signed an informed consent form briefly explaining the purpose and procedure of the study along with confidentiality and data use measures.

METHODS

The study consisted of 56 volunteering individuals (27 men and 34 women; age 21-50+). A portion of those that chose to be involved in the study were smokers, the rest were nonsmoking individuals. All of the participants of the study were students of various levels (MD1-MD4) attending the Saint James School of Medicine in Anguilla, British West Indies. Prior to beginning the study, all volunteers signed an informed consent form briefly explaining the purpose and procedure of the study along with confidentiality and data use measures.

Students were asked to complete an initial electronic questionnaire on the first day of the study which was utilized to access their overall basic health information. Every survey after this initial questionnaire asked the volunteers about their stress level, sleep quality, weekly caffeine consumption, weekly alcohol consumption, weekly tobacco use, and stimulant use.

The HR of the participants was measured bi-monthly, once pre-examination and once post-examination using pulse oximeters. There were 2 consecutive data collection sessions, both pre- and post-examinations, for the examination periods of the 2nd and 3rd quarters of the semester. The data collected was then analyzed and statistical tests were performed. The statistical analyses conducted were population standard deviation, population variance, a 2-tailed paired t-test, and a Wilcoxon signed rank test.