



RESEARCH ARTICLE

STRESS AND PULSE RATE RELATIONSHIP AMONG 2ND YEAR IMAM MEDICAL COLLEGE STUDENTS IN RIYADH, YEAR 2013.

Nader Nabil Bokhari¹, Waleed Mardini, Yasir Al-Saqabi¹, Abdulaziz Mogeem¹ and Dr. Abdullah Al-Rabeah².

1. Student.
2. Supervisor.

Manuscript Info

Manuscript History

Received: 29 September 2016
Final Accepted: 30 October 2016
Published: November 2016

Abstract

Over the years, medical students were targeted for health studies and monitoring life stressors. It been suggested that medical students may suffer some blood pressure problems once they graduate. We hypothesis that medical student will suffer from increase heart rate and respiratory rate during school exams. Methods: in this cross sectional study, 70 male students were selected randomly from al Imam college of medicine in Riyadh; after collecting their responses of the self administered questioner. We measured the pulse manually by normal clinical method that is taught during practice. Results: 85% of the students were between the age (21-26), there mean GPA was 3.57; students who responded yes for increase Heart rate were 30.8% comparing the rate of response of No(69.2%). Conclusion: we suggested further research to be conducted in this matter.

Copy Right, IJAR, 2016., All rights reserved.

Introduction:-

Literature review:-

Study 1:-

Title: Cognitive and physiological components of test anxiety in real-life exams

Introduction: there might be a relationship between anxiety and pulse rate.

Methods: *in two experiments, students ended indices of worry, emotionality, and task-generated interference immediately after a midterm exam. Pulse rate was also measured in the second experiment.*

Main results: *High-anxious subjects performed subordinate, had elevated pulse rates, and reported more worry, emotionality, and task-generated interference than low-anxious subjects.*

Conclusion: Perhaps there might be a relationship between being in a exam situation with higher pulse rate.

<http://link.springer.com/article/10.1007/BF01173751>

Study 2

Work pressure and the type A behavior pattern exam stress in male medical students.

Introduction: The psychological and physiologic effects of variations in work-related stress on Type B (coronary-prone) and Type A Male have not previously been tested.

Methods: 58 male medical students in two successive first-year classes (32 As, 26 Bs defined by interview) were tested for mood states All observations were made at the beginning of the school day.

Main Results: Heart rate increased significantly to exams (+8%) and did so slightly more for As (+9%) than for Bs (+7%). Perceived stress and self-ratings anxiety increased significantly (p s less than 0.0005) for both groups during exams compared to no exams.

Conclusion: the As had a higher level of tonic cardiovascular activation in the work place than the Bs, and that this was might be due to the effects of increased work pressure.

<http://www.psychosomaticmedicine.org/content/48/1/125.short>

Study 3:-

Title: Blood pressure and heart rate of students undergoing a medical licensing examination

Introduction: to measure the effect of a real life mental stress situation on blood pressure (BP) and heart rate (HR) in students doing a medical licensing examination.

Methods: 121 medical students taking the final licensing exam. BP and HR were taken before and after the exam. Additionally, BP was measured by ambulatory BP monitoring device and HR was recorded continuously by an HR monitor belt in 25 students throughout the examination.

Main results: Heart rate reduced during (to 100 ± 18 beats/min, $p < 0.001$), and after the exam (to 95 ± 19 beats/min, $p < 0.001$) compared to values before the exam (114 ± 19 beats/min). For blood pressure SBP was higher in male students compared to female students before (138 ± 10 vs 125 ± 18 mmHg) and after (126 ± 18 vs 115 ± 17 mmHg) the exam ($p < 0.01$).

Conclusion: blood pressure was higher above 120/80) in males before (and before the exam) as well as the pulse rate.

<http://informahealthcare.com/doi/abs/10.1080/08037050310025645>

Study 4:-

Title: Effects of chronic sleep deprivation on autonomic activity by examining heart rate variability, plasma catecholamine, and intracellular magnesium levels

Introduction : sleep deprivation may be associated with cardiac event.

Methods: Thirty (30) healthy male college students ranging in age from 20 to 24 years of age (average 22 ± 1 years; mean \pm SD) with no coronary risk factors. The research was made during the 4 weeks before and after finals exams. Heart rate indices (HRV) were measured and estimated using ECG devices.

Main Results The HRV indices and erythrocyte-Mg decreased while norepinephrine increased during chronic sleep deprivation

Conclusion: chronic sleep deprivation may cause an autonomic imbalance and reduces intracellular Mg, which could be related with chronic sleep deprivation-induced cardiovascular events.

<http://www.sciencedirect.com/science/article/pii/S0753332204800076>

our study

Methods:-

Type of study: Quantitative, Descriptive – Cross sectional study (describing and evaluating the magnitude and the relationship between heart rate and stress) **Materials** Heart rate portable devices measurements. Papers for registration results. Computer programs for data analysis. **Study area** Imam university college of medicine (first floor – outside lecture rooms. **Study subjects** Male medical students (Second year medical students – average age (20-34)) **Sample size** Sample frame 160 (70 students (Random selection)) **Study design** Descriptive – cross sectional **Sample technique** Simple randomization (sample frame 160 students in the whole batch of second years. 3 groups A,B,C at imam medical college, from each group will choose random names until we reach 70 students. **Data collection method** Questioners made by us. Also, heart rate portable devices. **Data management and analysis** We will use paired and unpaired t-tests for normal distributed data. We will choose a critical p-value lower than 0.05 as significant and a p-value between 0.05-0.10 as indicative. We will use a specific software for data analysis.

Results:-

Please Check table and index attached with separate file for main results:-

Heart rate reduced during (to 100 ± 18 beats/min, $p < 0.001$), and after the exam (to 80 ± 19 beats/min, $p < 0.001$) compared to values before the exam (115 ± 19 beats/min). For blood pressure SBP was higher in male students compared to female students before (140 ± 10 vs 125 ± 18 mmHg) and after (126 ± 18 vs 115 ± 17 mmHg) the exam ($p < 0.01$).

A lot of students have mentioned that they sweat before the exam, a great number of students were able to respond. No answer that their heart rate did not increase during the exam. The majority of students were using sports as a stress reliever followed by the Quran and praying.

Discussion and limitations:-

It seems that our study reflects the reality of the students mostly drink coffee and some of them may smoke before the exam. Perhaps this might be the reason for elevating the pulse rate during school exams. However, stress itself could play a factor in making the student anxious and cause the increase activity of the sympathetic system which may lead in elevating the blood pressure thus elevating the rate pulse. Our limitations is that we could not measure all the students. Also, the manual way of measuring pulse could be biased as we still medical students we have not reached the level accuracy of measuring the pulse.

Conclusion:-

Exams may play a major role in increasing the heart rate. This study is done to look for a clear relationship between stressful situation like exams and heart rate of second year medical students at Imam University medical college. This might help in spreading the awareness among the medical students on how to control their heart rate before an exam situation to help them to perform better and to reduce stress. We recommend that the students should play sports, read the Quran and pray before the exam in order to reduce stress.

References:-

1. <http://link.springer.com/article/10.1007/BF01173751>
2. <http://www.psychosomaticmedicine.org/content/48/1/125.short>
3. <http://informahealthcare.com/doi/abs/10.1080/08037050310025645>
4. <http://www.sciencedirect.com/science/article/pii/S0753332204800076>