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Analysis of Medical Student and Graduates Anxiety and Physical Activity Patterns while Preparing for Usmle

Emmanuel Bhatti MD MPH

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ABSTRACT

Our study proposes a quantitative investigation to identify trends of anxiety and physical activity among medical students or graduates while studying for the United State Examination Licensure Examination Steps at Pass Program in Champaign, Illinois, The research emphasizes students' physical activity and anxiety contributing to study performance, such as retention and concentration with USMLE question bank improvement. The quantitative research study aims to evaluate medical students and graduates by providing participants with questionnaires. The study is divided into two phases. The first phase provides a clinical questionnaire to participants, and the second phase interviews to evaluated responses and eliminate any barriers in the research. Students or graduates engaged in physical activity are more likely to retain and have efficient concentration while studying for the USMLE examination. Physical activity controlled participants' anxiety; however, physical activity did not significantly change the daily USMLE test banks. Medical students and graduates are less physically active and have developed generalized high levels of anxiety. The study estimated that 73.3% of students claimed that they suffer from anxiety, contributing to test banks' low performance. The research has shown that medical students and graduates are not regularly physically active. Females are less physically active than males. The concentration results presented that 59.7% of participants stated daily physical activity improved concentration by providing efficiency on USMLE question banks. 59.5% of participants mentioned that physical activity significantly helped students and graduates control their anxiety levels. 51.1% of participants stated they did not witness any significant changes (increase or decrease) in daily question bank performance with regular physical activity. 46.9% of students stated that physical activity improved retention of study material with daily physical exercise activity. The research has significantly shown medical students' and graduates' study hectic schedules hinder participants' physical activity. The stress of USMLE has caused students and graduates to experience a high level of anxiety. Students or graduates engaged in physical activity are more likely to retain and have efficient concentration while studying for the USMLE examination. Physical activity controlled participants' anxiety; however, physical activity did not significantly change the daily USMLE test banks.

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Introduction

United States Medical Licensure Exam (USMLE) is a crucial exam for medical students and graduates to gain entry as licensed physicians. American medical students take the USMLE examination in their second year of medical school in comparison to international medical students or graduates that take the USMLE exams between their second year of medical school or post-graduation. The time spent in university can bring many health issues and give rise to factors that can contribute to diseases later in life^[1]. Medical students and graduates may develop unhealthy habits, anxiety, or other barriers while studying for their career's most important exam. Numerous factors may contribute to medical students or graduate's anxiety. Medical students or graduates can alter or neglect their physical activity patterns, contributing to students' anxiety. A high prevalence of anxiety and depression among medical students has been

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reported worldwide ^[3]. Physical activity is a protective factor for noncommunicable diseases such as cardiovascular disease, stroke, diabetes, and some types of cancer. Physical activity is associated with improved mental health, memory, delay in the onset of dementia and improved quality of life and wellbeing ^[5] (Langhammer et al., 2018).

Medical education's presents with high-stress levels while preparing for board examination that contributes to anxiety and lack of physical activity. Anxiety based on medical education can be witnessed globally. The global prevalence rate of anxiety among medical students is 33.8% (95% Confidence Interval: 29.2–38.7%). Anxiety is most prevalent among medical students from the Middle East and Asia ^[6]. Physical activity is pivotal for people to expand the bloodstream to dispose of toxins and eliminate diseases' longterm effects. Physical activity can be extremely challenging and time-consuming. Although medical students or graduates are viewed as an impermanent piece of university life, in any case, undesirable propensities got up the level, for the most part, to continue in adulthood. Universities, subsequently, speak to a significant open door for wellbeing and wholesome instruction. University life is also a period during which people are generally presented to pressure and absence of time, representing an obstruction to selecting sound practices. Healthy active living benefits individuals and society in many ways, such as increasing productivity, improving morale, decreasing absenteeism, and reducing healthcare costs. Other benefits include improved psychological wellbeing, physical capacity, self-esteem, and the ability to cope with stress ^[7].

Medical examination for medical students or graduates is significant to gain a degree and a license to practice. Our study proposes a quantitative investigation to identify trends of anxiety and physical activity among medical students or graduates while studying for the United State Examination Licensure Examination Steps at Pass Program in Champaign, IL. The research emphasizes students' physical activity and anxiety contributing to study performance, such as retention with USMLE question bank improvement.

Method

The quantitative research study aims to evaluate medical students and graduates at a medical licensure preparatory program. The Pass Program, located in Champaign, Illinois, has provided the researcher with participants. Dr. Francis Ihejirika acted as a research supervisor and provided ethical guidelines for the research study. The researcher correlated with the supervisor to develop a plan that divides the study into two phases. The first phase provides a clinical questionnaire to participants, and the second phase interviews to eliminate any barriers in the research.

The researcher purposed a clinical questionnaire to analyze medical students and graduates. The participates selected by volunteering for the study in the pass program. The researcher explained all legal documents prior to the beginning of the study. The study submitted questionnaires to 185 medical students and graduates at the pass program. The research eliminated 54 students from the study. Students' elimination occurred based on students' numerous factors on prescription medications or health conditions that can alter the results or biases. The researcher selected 131 (males: 62 and females 69) students to participate in the study. The questionnaire required the student to provide their demographics, such as age and ethnicity. The researcher divided ages into a sub-category. Out of 131 students, eight students belong in the ages 20-25, eighty-two students in ages 25-30, thirty-seven students in the ages 30-35, and four students belonging above 35 years age range. The subcategories ethnicity have shown twenty-four of White/Caucasians, sixteen African Americans, fifty-six Asians, thirty-four Hispanics/Latinos, and one Native Hawaiian or other Pacific Islanders students in the study. Factors such as demographics presents information concerning investigating patterns that are fundamental for evaluating participants in a specific phase correlating accurate responses in the target population.

The research aspirated to analyze anxiety and physical activity patterns. The study intended to understand if students are taking part in physical activity such as exercising at the gym, indoor endurance, or outdoor activities. The research examined if a significant correlation between physical activity and anxiety is observed with students' daily performance on USMLE question banks. The researcher created a significant questionnaire requesting in-depth information on anxiety levels, physical activity, duration, and physical activity types with a correlation of daily performance activities on USMLE test banks. The early phase of the researcher developed consent forms, disclosure, and confidentiality documents. The study criteria consisted of medical students willing to participate while studying for the USMLE examination at the preparatory program. Students and graduates were encouraged to participate by filling out questionnaires with responses regarding physical activity and anxiety levels.

Results

The first phase of the research collected questionnaires from February of 2018 to till June of 2018. The study randomly selected students and graduated actively studying for the USMLE. Ouestionnaires were administered to the 131 students at random in the pass program. Data collection is correlated with students and graduated daily test bank's performance to understand behavior patterns. The questionnaire included additional details on the disruption of individuals' exercise regiments, BMI (Body Mass Index), or other factors. The questionnaire results analyzed patterns with genders, demographics, and behavior patterns in the target population. The second phase of the study interviewed the target population to eliminate any study barriers or limitations. The interview session explains the questionnaire participants, verifies responses, and answers the to participants' questions or concerns. The second phase of the interview correlated USMLE test bank performances with the individual students' or graduates' responses.

The results of the study presented the patterns of physical activity and anxiety. The questionnaire provided generalized responses to questions of physical activity. The participants were asked based on their study schedule if they exercised regularly or daily. Forty-six students stated yes, eighty-five students stated no. Figure 1 presents the breakdown of gender that exercises regularly. Seventeen females stated they exercise regularly, while forty-nine stated they do not exercise regularly. Twenty-nine males stated they exercise regularly, while thirty-six stated they do not exercise regularly. In comparison medical students are not physical active and females are less active then males.



Figure 1. Current Regular Exercise Patterns in Males and Females.

Participants were asked if they exercised at home, in a gym, outdoors, or at the pass program. Figure 1 presents exercise locations with a significant breakdown of gender.

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Interviews sessions, students and graduates were asked details of physical activities preferred, such as endurance, swimming, weightlifting, push-ups, sit-ups, walking, squats, resistance exercise, or yoga.

The fifty-eight participant, thirty-five males and twentythree females, stated they exercise at the gym. Forty-five participants, thirty females and fifteen males, stated they exercise solely at home. Twenty-two students, fifteen males, and seven females stated they exercise outdoors. The pass program facilities provided students with exercise equipment such as benches for weights, ropes, kettlebell, and exercise machines. Six students, two females and four males stated they exercise regularly at Pass Program.





The duration of physical activity is a significant factor that research evaluated. The duration of the physical activity can eliminate risk factors of chronic or long-term illness. It has been observed that practically all the long-term conditions that lead to physical disability are more established in adulthood as risk factors of individual life choices with environmental exposure ^[8]. Participants were asked how many times they exercise in a week. Figure 3 represents the duration of the exercise. Fifty-two participants, thirty-two males, and twenty females stated they only engage in physical activity once a week or less. Forty-eight participants, thirtytwo males, and six females stated that they engage in physical activity three or more times a week. In comparison, thirty-one participants, twenty-one males, and eleven females stated that they only engage in physical activity twice a week.



Figure 3. Physical Activity Duration.

Figure 4 emphasizes the time spent exercising. American Heart Association recommends a minimum of 150 minutes per week of moderate-intensity aerobic activity or 75 minutes per week of vigorous aerobic activity, or a combination of both, preferably spread throughout the week ^[2]. The researcher asked participants how much time the students spend exercising. Thirty-six participants responded to (six males and thirty-females) exercise a minimum of 15 minutes or less weekly. Forty-six participants, (nineteen males and twenty-seven females), stated they exercise a minimum of 30 minutes weekly. Forty-six participants, (thirty-three males), and thirteen females mentioned they exercise a minimum of 1-hour weekly. Three students, only males, mentioned exercise a minimum of 2 or more hours weekly.





Figure 5. The participant responded to the consistency of their physical activity. Students were asked if they were consistent with physical activity? Forty-one students claimed yes that they are consistent with their physical activity with a hectic study schedule. Ninety students stated no on questionnaire that they have not been consistent with their physical activity. Participants elaborated in the interview session the concerns about their physical inactivity. A participant mentioned the impact of their busy daily schedule at 6 am and ends at 9 or 10 pm. Most students or graduates take 1-hour lunch with 15- or 30-minutes breaks in which they try to incorporate their physical activity in the breaks.



Figure 5. Medical Students and Graduates Physical Activity Consistency.

Medical students and graduates can develop generalized anxiety due to a hectic schedule, upcoming examinations

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deadlines, or other personal problems. Figure 6. participants were asked if they have developed generalized anxiety while studying for their board examination. Anxiety was presented in 73.3% (ninety-six) of participants, forty-four males, and fifty-two females. While 26.7% (Thirty-five) twenty-one males and fourteen female participants expressed, they did not have anxiety symptoms. Figure 7. asked participants to identify on a scale from 1 to 10 regarding their anxiety levels. 32% of students ranked highest with level 8 anxiety, followed by level 5 on the scale.



Figure 7. Medical Students and Graduates Anxiety Levels.

The second phase of the research study analyzed the performance of medical students and graduates. In the study, participants were asked in the questionnaire and the interview sessions regarding their USMLE performance. Participant responses were compared with USMLE performance regarding physical activity and anxiety on test bank performance. Figure 8. participants were asked retention-based questions if physical activity assisted in the retention of study material. 46.9% of students stated that physical activity improved retention of study material, while 12.5% stated that physical activity did not benefit their retention. Additionally, 40.8% of students stated they did not witness a significant change in retention.

Physical activity and anxiety contribute to an increase or decrease concentration. Advances in neuroscience have examined substantial progress of physical activity to cognitive performance with active learning. Figure 9. participants were asked if daily physical activity increased concentration on their daily question banks. The concentration results presented 59.7% of participants stated daily physical activity improved concentration by providing efficiency on USMLE question banks. In comparison, 12.5% of participants mentioned that their daily physical activity did not help them concentrate on USMLE question banks. 28.7% of participants responded by mentioning they no significant change was seen in concentration with daily physical activity. Additionally, participants were asked if they observed an increase in their daily question bank performance with regular physical activity. The researcher observed 32.1% of participants with an increase in their daily question bank performance with regular physical activity. 16.8% of participants mentioned they did not observe an increase in their daily question bank performance with regular physical activity. While 51.1% of participants stated, they did not witness any significant changes (increase or decrease) in daily question bank performance with regular physical activity.

Physical Activity vs. Retention Total Number of Students Males Females 24 12 12 12 12 12 14 44 67 Yes No No Change





Figure 9. Performance vs. Concentrations Patterns in Males and Females Participants

Physical activity can decrease symptoms or the effect of anxiety. Regular physical activity lowers the prevalence of the chronic disease by implementing a healthier lifestyle. Individuals with a daily exercise regiment exhibit slower rates of age-related memory, increase blood flow that decreases the effects of long-term illness and cognitive decline compared to those who are more sedentary ^[4]. Figure 10. Participants were asked if physical activity assisted in control their anxiety levels. The recorded response showed a 59.5% of participants mentioned physical activity significantly helped students and

graduates control their anxiety levels. In comparison to 40.5% of participants, physical activity did not significantly help students or graduates control their anxiety levels.

The research aimed to understand in-depth the types of physical activity of participants. Figure 11. participants were informed in the questionnaire and elaborated in the interview sessions regarding activities, including exercise that can be accomplished at home or outdoors. At home endurance, physical activity included P90x, insanity, hip hop abs, pilates, app workout, or resistance band exercise. Outdoor activities included hiking, walking, swimming, biking, or running. Participants were asked if they took part in other outdoor sporting events. These outdoor sporting activities included attending kickboxing, jiu-jitsu, or mixed martial arts classes. The study requested students to write in their responses to their activities.

Discussion

The study compared students' responses to performance of daily question bank. The research found an inverse relationship between anxiety sensitivity with exercise frequency limited the effects of symptoms. The research has shown that medical students and graduates are not regularly physically active. Females are less physically active than males. Active participants are frequently involved in walking, endurance activities, and weightlifting. Medical student's and graduates' hectic schedule can hinder their physical activity routine. Participants preferred to spend 30 minutes to an hour on physical activity per week. Medical students and graduates provided extensive information on their anxiety levels. 73.3% of students claimed that they suffer from anxiety, contributing to low performance on examinations. Interview sessions ranked participants' anxiety levels. On a scale of one to ten, students ranked eight as the highest point of anxiety. Nearly 51.1% of students saw no significant change in their USMLE performance with daily exercise, compared to 32.1% who perceived a significant performance change.

The researcher focused on eliminating biases from the study by conducting interviews to review the questionnaire with the target population. The study acknowledged influences on how participants respond to their questions. The research analyzed each particular age group, sex, race, ethnicity, or other attributes such as medication or chronic illness that can alter the study results. The researcher acknowledged the study's potential risk, such as the Hawthorne effect in which participants change behavior upon awareness of being observed. The interviewee asked to follow up on questions to eliminate biases.



Figure 10. Physical Activity vs. Anxiety. Physical activity contribution in controlling anxiety levels in medical students and graduates.



Figure 11. Type of Exercises. Frequently ranked daily activities.

Conclusions

Investigation of physical activity and anxiety among medical students and graduates has answered the proposed research question. Medical students and graduates are less physically active and have developed generalized high levels of anxiety. Despite students' and graduate's hectic schedules, the participants actively managed to exercise for an average of 30 minutes. Students or graduates engaged in physical activity are more likely to retain and have efficient concentration while studying for the USMLE examination. Physical activity controlled participants' anxiety; however, physical activity did not significantly change the daily USMLE test banks. The study estimated that 73.3% of students claimed that they suffer from anxiety, contributing to low-performance on test banks. 46.9% of participants stated that physical activity improved retention of study material with daily physical exercise activity. The study showed that 59.5% of participants mentioned that physical activity significantly helped students and graduates control their anxiety levels. Physical activity has assisted in student's retention of study material. Monitoring anxiety and physical activity patterns can determine the long-term effect leading to chronic illness. Anxiety symptoms can lead to underline conditions such as increase heart rates or panic attacks that students may be facing at the time of initial studying or the day of examinations. Physical activity can decrease the effects of anxiety symptoms. Interventions can assist in evaluating the health status of medical students and graduates. Social change can occur by implementing a system by informing, educating, and empowering the public to understand their health status. Future studies can verify other psychological risk factors that can create physical activity barriers and medical professionals' anxiety.

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