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The Prevalence of Psychological Side Effects of Concussions in Division II and III Athletes in Ohio

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Abstract

Background: Concussions are becoming an epidemic as millions of athletes are diagnosed with concussions each year. Concussions are not homogenous injuries and should be managed uniquely. Often health care providers focus on the physical side effects of concussions and ignore the psychological side effects.

Methods: In order to determine the prevalence of psychological side effects resulting from concussions and the frequency of ATCs or team physicians managing their psychological symptoms we sent out a survey. The survey included seventeen questions related to demographics and concussion symptoms that were sent to Division II and III athletes in Ohio over the age of 18.

Results: Fifteen surveys were received from participants that had experienced at least one concussion. The most common psychological symptom reported was a decrease in energy (10), followed by lack of motivation (5), mood swings (4), anxiety (3), and fits of rage (2). Two respondents did not experience any emotional symptoms related to their concussion(s). With five of the fifteen respondents have been asked about emotional symptoms by their athletic trainer or team physician.

Conclusion: Our survey was limited by time restraints and limited responses. Our survey did not bring statistically significant results. However, it did show that psychological effects are present in those with concussions. In addition, it showed that athletic trainers and team physicians need to be more holistic in their management of concussions.

Keywords: concussions, psychologic side effects, concussion management

Introduction

Concussions are becoming an epidemic with between 1.6 and 3.8 million concussions occurring annually^{1,2}. Most patients recover within seven to ten days of the concussive event^{1,3}. However, five to fifteen percent of patients have symptoms for ninety days or more after a concussive event³. Patients with ongoing symptoms are more likely to develop neurodegenerative disorders such as chronic traumatic encephalopathy, post-concussion syndrome, post-traumatic stress disorder, and dementia, as well as depression, substance abuse, and anxiety^{4,5,6}.

Typically, health care providers focus on the physical symptoms of concussions, however, concussions are not a homogenous injury⁷. In fact, researchers have proposed six clinical profiles of concussions including: “anxiety and mood, posttraumatic migraine, oculomotor, vestibular, cervical, and cognitive fatigue”⁷. Often the psychological symptoms of concussions, in the anxiety and mood profile, are ignored and are not used as markers for recovery protocols⁸. The anxiety and mood profile includes: “emotional disturbance such as experiencing anxiety, feelings of depression, hypervigilance of somatic complaints, and sleep dysregulation”⁷. Prompt recognition of mental health disorders after a concussion is necessary due to their frequency and potential to deter recovery in other symptom areas⁹.

In order to assist in addressing the gap in the acknowledgement and management of psychological effects of concussions, we conducted a survey. The purpose of this study was to determine the prevalence of psychological effects of concussions and if they have been managed by their athletic trainer or team physician. We hypothesized that there will be a moderate amount of psychological effects reported with a minimal amount of participants that have received the proper care for their mental health changes.

Methods

The study conducted was in the form of a questionnaire, or survey. Prior to sending out the survey, we received approval from the IRB at Cedarville University on November 2, 2017. We sent out the survey from Cedarville University in Cedarville, Ohio, on November 12, 2017. The deadline to take the survey was on November 30, 2017, till noon; therefore, the recipients of the survey had eighteen days to complete it.

By opening the survey link, the participants gave their consent for us to use their responses in our study. The design of the study was a descriptive survey. The survey was sent out to Division II and III colleges in the state of Ohio via their head athletic trainers. All of the participants were to be eighteen-years-old or older. They had to play a sport at the varsity or junior varsity level at a Division II or III college in Ohio. Also, the participants had the opportunity to fill out the entire form if they had sustained a clinically diagnosed concussion or multiple concussions. If athletes had not been diagnosed with a concussion, the survey ended immediately after answering “no” to the respective question. With the software, Qualtrics, the information gathered would determine the validity and reliability of the study and the answers received from the participants. By having a variety of questions, it ensured the study’s reliability. Sending the survey to all Division II and III colleges allowed for the opportunity to receive more completed surveys, which would provide a more reliable study. Also, having multiple researchers helped eliminate some of the bias that was associated with having a singular researcher conducting and creating the survey.

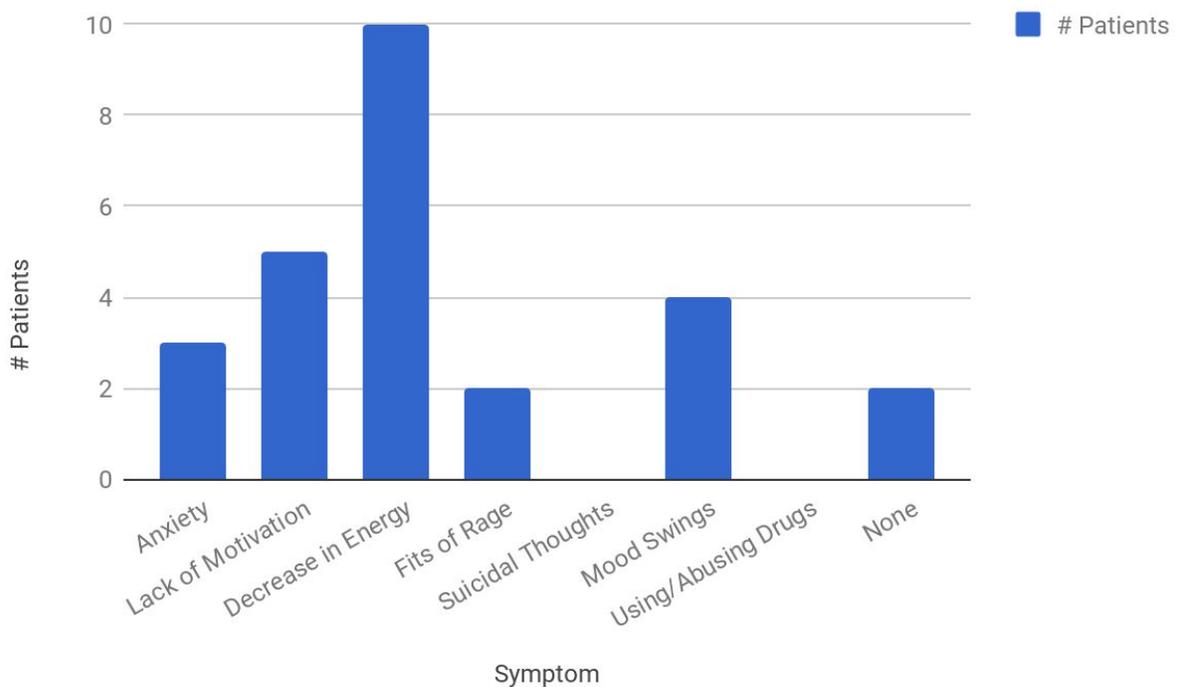
Once the allotted time elapsed on the survey, the data collection and analysis began. The data was then analyzed using Cedarville’s Qualtrics program for similarities in responses amongst athletes that had the same symptoms that occurred as a result of sustaining a

concussion, and determining whether or not they had sought treatment or brought their symptoms to the attention of their athletic trainer or team doctor. The number of concussions, their age, and the sport played was accounted for, and looked at for possible trends.

Results

The survey was completed by 18-23 year olds and yielded twenty-eight responses. However, thirteen did not experience a concussion and were not included in the analysis (leaving fifteen respondents.) Three of the fifteen were male and twelve were female. These participants primarily played soccer, volleyball, and track and field. A majority had experienced only one concussion and were held out of competition for one to four weeks.

The most common symptom reported was a decrease in energy (10), followed by lack of motivation (5), mood swings (4), anxiety (3), and fits of rage (2). (Graph 1) Two respondents did not experience any emotional symptoms related to their concussion(s). None of the respondents were diagnosed with a mood disorder or sought emotional treatment. Five stated that their athletic trainer or team physician asked them about emotional changes due to their concussion(s).



Discussion

This study was designed to better assess the prevalence of psychological effects caused by sustaining a concussion or multiple concussions. Along with determining how prevalent concussions are in effecting psychological impact on athletes, the statistics gathered from the survey distributed to all Division II and III colleges in Ohio could help distinguish the number of ATCs and/or team physicians that are aware of these changes that can occur, and address these possible changes with their athletes to ensure they are receiving the best medical care.

With the limited number of completed surveys, we were unable to attain any significant statistics that would demonstrate how prevalent psychological effects were among athletes that have been concussed. Unfortunately, our survey was only open to our population for eighteen days. If future studies were done to assess the psychological effects of concussion, the survey would likely receive a better response rate if it were open for to all colleges and/or high schools, and if it were open for a longer duration of time. This would allow the chance for a larger data pool to be utilized when analyzing the information; and this would allow for the possibility of the data to have significance in the results obtained.

Also, when analyzing the answers to a couple of our questions that gave the participants the opportunity to write out their own answers, they failed to answer a portion of the question or might have misinterpreted what was being asked. For future studies, similar to this one, a pilot survey should be sent out to fellow researchers and scholars, in order to assess the clarity of the questions. As previously mentioned, the time constraint in this study was a hindrance to our capability of creating a well-rounded survey with clear and concise questions.

For future studies, we would suggest adding questions to the survey that are addressing the athletes' return to play protocol and their social support system. In addressing the return to

play protocol they were put through prior to coming back after a concussion, it could help bring insight to ATCs and team physicians approach to treating athletes and the possibility that a poor return to play protocol could lead to lasting psychological impact apart from the physiological changes caused by concussions. Determining how strong an athlete's support system could show some altered behavior whether that's lack of motivation to return to play, which could cause the healing process to be hindered or could cause some symptoms to linger longer than those with a good support system in place.

Another aspect to look into for future studies is the psychological impact of being held out of play for an extended period of time for an injury that is not visible. This idea can be discouraging to athletes. Not all athletes have a clear concept of what concussions are and how detrimental they can be on a person's mental, physical, and psychological health if not treated properly. With misconceptions about the seriousness of concussions and how to proceed, athletes that do suffer from them can feel isolated, and even ashamed, when they have to be out of play. These negative feelings can lead to a more difficult path to recovery.

With more surveys conducted and research assessed, the prevalence of psychological effects after being diagnosed with a concussion, or multiple, can better be understood for ATCs, team physicians, and athletes from all sports. By being informed of the prevalence, this can better equip the medical staff on how to address all signs and symptoms of an individual with a concussion, both psychologically and physically. Though research is beginning to focus more on the actuality concussions causing psychological changes

Conclusion

Our survey was very limited in its ability to fully determine the prevalence of psychological symptoms or the frequency of ATCs or team physicians inclusion of psychological

evaluations in their concussion management. Therefore, further study should be done on this subject, including the types of concussion management used. Although our study was limited, it did demonstrate a need for athletic trainers to be more holistic in their management of concussions. Athletes do experience psychological symptoms following concussions, so ATCs should not focus solely on the physical symptoms in their management or clearance of concussions.

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