

An Investigation On Influence Of Exercise, Diet And Sleep On Mental Health Of Student Athletes

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ABSTRACT

The mental health of student-athletes is the critical area of concern, given the unique pressures they face. The mental health of student-athletes is a growing concern due to the dual demands of academic responsibilities and athletic performance. This study investigates the impact of three fundamental lifestyle factors like exercise, diet and sleep on mental health of student-athletes in colleges hailing from Khyber Pakhtunkhwa (KP), Pakistan. Thus, using a survey method, the data were collected from a sample of college student-athletes to analyze the relationships between these factors and their overall mental well-being. The study examines¹ hypothesized relationship amid research variables related to association & cause-&-effect relationship by using correlation and regression procedures. The study offers significant information in reaching the conclusion & making decisions. The findings provide insight into optimizing well-being of student-athletes by promoting healthy practices in both academic and sports settings. This research aims to offer practical recommendations for educators, coaches, and policy makers to support mental health of student-athletes.

Keywords: *Investigation Exercise, Diet, Sleep, Mental Health, Student Students, KP, Pakistan.*

INTRODUCTION

Mental health is a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, and can work productively and fruitfully [1]. According to literature, mental health includes the subjective well-being, perceived self-efficacy, autonomy, competence, inter-generational dependence and self-actualization of one's logical and emotional potential, among others [2]. The educational career of individual is emotionally and rationally more demanding than almost any other stage of life. At this stage, an individual faces a great deal of pressures and challenges that pose a variety of physical, social and emotional difficulties and as a result they become more vulnerable for developing mental health problems [3]. The mental illness, known as mental disorder and psychiatric

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disorder, is a behavioral or mental pattern that causes significant distress or impairment of personal functioning [4]. In this linking, the serious mental illness can accompany lifestyle habits such as unhealthy diets, sedentary behaviors, low physical activity level, and tobacco use [5]. Thus, an awareness can increase students' ability to decipher which foods are best for the body and mind by understanding the risks associated with poor diet and health.

It is widely understood that participation in exercise is essential to healthy lifestyle as exercise, along with healthy eating, is the most significant thing a person can do to reduce the chance of illness [6]. The regular exercise reduces the risk of health issues such as: stroke, cancer, diabetes, liver and kidney disease, obesity, osteoporosis and brain diseases like dementia and depression [7]. There are many factors that influence health status and greatly impact everyday life. One of most modifiable and controllable areas is diet and nutrition as diet is simply what you consume and the quantities of how much you consume, therefore fueling body and profoundly impacting how an individual functions physically, mentally and even socially [8]. Athletes at all levels place incredible demands on their bodies over the combination of physical work, energy expenditure, time and recovery periods, by nature they are pushing their bodies to extra limits [9]. The sleep health in general population across the globe is poor as poor sleep behaviour and clinical sleep disorders [10], like insomnia and sleep disordered breathing, are linked with deleterious health outcomes, including hypertension, diabetes, stroke, psychological impairment, and psychiatric and mental disorders.

Objectives & Hypothesis

1. To examine the association between exercise, diet, sleep and mental health of the students-athletes (H1: Correlation Analysis).
2. To examine influence (cause-&-effect) of exercise, diet, sleep on mental health of students-athletes (H2: Regression Analysis).

Literature Review

The existing literature has supported the claim that mental health issues are prevalent amid the college community. More specifically, anxiety and depression have been the most common issue that college students are facing [11]. The mental health issues exist within the college community and those actions must be taken to prevent conditions from worsening. The literature revealed that college students who exercised more vigorously and reached the exercise recommendations were less likely to experience signs of mental health issues and perceived stress than students who did not exercise as much [12]. The researchers explored the correlation amid mental health problems, suicide attempts, and physical exercise among college students. The findings showed that physical exercise was negatively associated with all measures of mental health problems and suicidality in dose-response manner [13]. This means that with more exercise, the less likely it was for a student to experience symptoms of anxiety and depression. The students who had high levels of exercise had low levels of depression and anxiety symptoms [14]. It was found that students who exercised more intensely, reported better mental health than students who made lower intensity exercises.

These high-intensity exercises are the ones that resulted in heavy sweating and breathing. The Several studies have shown the need for treatment of mental health problems within the college

community [15]. The mental health services within college campus need to be improved and more readily available. These resources would not only improve the mental health of college students, but they could be helpful for their academic performance [16]. Both studies agree on the need for college campuses to have more counseling services and other support services to help students with the mental health issues [17]. Many studies have compared men and women when studying mental problems like depression. The exercise improves mental health and well-being, reduces depression and anxiety and enhances cognitive functioning. The physical exertion can be highly dominant when it comes to barring and managing mental health disorders [18]. The literature revealed that individuals with mental illness eat low fiber food with saturated fat and live a life with insufficient physical inactivity, which are the two risk factors for cardiovascular disorders, and which were found to be twofold more in those patients compared to the normal population in diverse circumstances.

The literature revealed clues about association of sedentary lifestyle and daily steps taken with cardiometabolic variables in schizophrenic patients. It was observed that the sedentary lifestyles were associated with the poor metabolic status and physical activity was found to be important factor for metabolic advances [19]. The modern nutritional profile, typically rich in saturated fats and refined sugars, is recognized as a major contributing factor, along with the reduced physical activity, to current epidemics of metabolic disorders, notably obesity and diabetes [20]. Along with these conditions, recent years have witnessed gradual and weighty increase in prevalence of brain diseases, particularly mood disorders [21]. The literature revealed that biological factors may explain beneficial effects of exercise on depression derives from the research showing that exercise promotes the secretion of neurotransmitters like serotonin [22]. The study also revealed high intensity exercise programs to be more effective compared to the low intensity programs. In addition, one study showed physical exercise had a significant effect on depression [23]. All in all, research has provided robust evidence that exercise can be considered for the treatment and management of depression.

The research has also shown which type of exercise is most effective in reducing mental illness. For example, the three basic types of exercise are walking, jogging where oxygen is metabolized to produce energy; muscular strength (weightlifting) when energy is provided without the use of inspired oxygen [24]. The exercise is effective in treating depressed individuals as it is evident physical activity be beneficial in relieving mental illness, mainly depression. The importance of nutrition in relation to mental health is crucial as there is no better way to carry out practicing it on mental health disorders [25]. The professionals have expressed the importance of diet when it comes to mental normality because one's health can be related to and affected by consumption of food [26]. Besides, because of modern medical approaches such as antipsychotic medication has failed many, people are becoming more aware of the impact diet has on disease antipsychotic medication is linked with increased hunger, and unhealthy eating [27]. The people with severe mental illness are more likely to engage in the health risk behaviors, compared to the general population and these health risk behaviors include poor dietary and sleeping patterns, low levels of physical activity,

The research studies affirm rates of health-risk behaviors likewise tobacco smoking, physical inactivity, poor diet, and risky sexual behaviors are heightened in people with serious mental

illness [28]. The human brain depends on various nutrients for fuel like vitamins, trace elements, minerals, and amino acids which control the chemical factories that direct our cells. Further, the brain is immersed in a chemical environment in which even slight imbalances can alter cognitive and emotional functioning, which means correlation can exist amid dietary practices, exercise and mental health [29]. The unhealthy lifestyle patterns with the insufficient physical activity, sedentary motives, and high-calorie food intake are reported to be more common in individuals with mental illness, including schizophrenia and bipolar disorder [30]. Few people are aware of connection amid nutrition and mental illness. The suboptimal dietary intake, frequent alcohol intake, changes in taste due to aging, food allergies, special diets, eating disorders can negatively affect nutritional status [31]. The diet is lacking, fresh, natural foods which have vital nutrients needed for proper brain function and mental health, revealing mind-body connection amid food and mental stability.

Research Methodology

This study is quantitative in nature that aims to examine relationship in chasing the hypotheses and reaching conclusion. The the positivism approach was used to chasing relationships among research variables (exercise, diet, sleep, mental health) of study. The research approach specifies the way through which data is collected from the respondents by retrieving them to reach their answers about variables of research in order to reach required conclusion through justification towards desired outcomes. The population of interest in this research is students hailing from colleges in KP, Pakistan wherein 7000 students from colleges wherein a sample is drawn from population (378), has been extracted by using the sampling formula widely used in the social research studies. Thus, 378 questionnaires were distributed among which 366 were recollected and used for analysis. Similarly, the random simple technique was used to access the population of study which comes under the non-probability technique to ensure required data from diverse dimensions. Also, both secondary and primary data were used to collect data from respondents and from existing knowledge databased to analyze data to reach conclusion. The questionnaires were adopted from previous studies. Similarly, 5-point Likert scale was used to record responses of respondents about research issues in particular context to access respondents and achieving desired outcomes.

Results Of Study

Table 1 Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Exercise	366	1.30	4.80	3.1699	.77632
Diet	366	1.80	4.60	3.1244	.83933
Sleep	366	1.70	4.70	3.4344	.59979
Mental Health	366	1.63	4.62	3.3433	.60935
Valid N (listwise)	366				

The descriptive statistics provide significant information about the research issues in particular context in order to examine the research issues from different perspectives to provide detailed

and comprehensive understanding about the research variables of research. The results provide significant information about the sample, mean, minimum and maximum response rates as well as standard deviation that are within the required ranges and thus helped in describing research variables significantly.

Table 2 Correlation Analysis (H1)

		[1]	[2]	[3]	[4]
Exercise [1]	Pearson Correlation	1	.367**	.624**	.663**
	Sig. (2-tailed)		.000	.000	.000
	N	366	366	366	366
Diet [2]	Pearson Correlation	.367**	1	.377**	.364**
	Sig. (2-tailed)	.000		.000	.000
	N	366	366	366	366
Sleep [3]	Pearson Correlation	.624**	.377**	1	.654**
	Sig. (2-tailed)	.000	.000		.000
	N	366	366	366	366
Mental Health [4]	Pearson Correlation	.663**	.364**	.654**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	366	366	366	366

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation procedure was used to examine the association among the research variables of current study with respect to relationships amid independent and dependent variables of study. The correlation Analysis is a statistical method used to measure the strength and direction of the relationship between two or more variables. It helps determine whether and how strongly pairs of variables are related. The results revealed that all the variables are positively and significantly associated like exercise and mental health ($R = .663$ & $P = .000$), diet and mental health ($R = .364$ & $P = .000$), and sleep and mental health ($R = .654$ & $P = .000$), and from these correlation results, hypothesis is accepted based upon the results obtained through correlation about strength and direction in association.

Table 3 Regression Analysis (H2)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.734a	.539	.535	.41542

Table 4 Regression Analysis (H2)

ANOVA					
Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	73.052	3	24.351	141.100	.000b
	Residual	62.473	362	.173		
	Total	135.525	365			

Table 5 Regression Analysis (H2)

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.865	.132		6.562	.000
	Exercise	.315	.036	.402	8.642	.000
	Diet	.154	.128	.275	1.906	.027
	Sleep	.381	.047	.375	8.045	.000
a. Predicting Variables: Exercise, Sleep & Diet						
b. Dependent Variable: Mental Health						

The regression procedure was used to examine the cause-&-effect relationships among research variables in order to confirm the prediction of mental health through exercise, sleep and diet to extract the desired information and reaching the conclusion and making suitable decision about the hypothesis with respect to its acceptance or rejection. The results of regression revealed that there is 53.9% change in the mental health is due to the exercise, sleep and diet which have been confirmed by AVOVA outcome. The results revealed that all predicting variables have significant impact on criterion variable like exercise ($\beta = .315$ & P-value = .000), sleep ($\beta = .154$ & P-value = .027), and diet ($\beta = .381$ & P-value = .000), and thus from the regression results, the hypothesis is therefore accepted.

Discussion

The research shows the severity of depression and other mental imbalances can be rooted in diet as increased consumption of diet rich in fruit and vegetables is linked with increased happiness and heightened of psychological health and well-being [32]. The literature confirmed that most rampant mental disorders are bipolar illness, schizophrenia and obsessive-compulsive disorder [33]. The status of consuming whole foods cannot be stressed enough, as processing techniques involving milling, untying, exposures to air, light, heat, radiations, changes in acidity osmolality, and other techniques during freezing, drying, canning, or vacuum packing can and do alter the content of nutrients and other nonessential bioactive food constituents [34]. Many people do not realize that these conditions, which lead to premature death, are often preventable or at least the manageable through diet, exercise, and when needed the medication [22]. The research shows specific foods can contribute to worsening of mental illness. As a result of societal norm of poor eating habits, dramatic rise in mental illness is recorded [31] and many foods play a larger role in enhancing mental disorders than others in the mental health and result in symptoms of severe depression and anxiety.

In addition, the excessive consumption of high-fat and high-sugar foods can increase systemic inflammation. Obesity and nutritional components, for example, saturated fatty acids, have been considered triggers of subchronic inflammation, which contributes to metabolic syndrome and deterioration of mental health [18]. The study showed that inflammation was associated with all mental health outcomes, particularly depressive symptoms as diets promoting inflammation are low in omega-3 fatty acids which are vital part of normal brain functioning [24]. The sleep plays a vital role in good physical, mental health and well-being throughout our life. During sleep, our body is working to support healthy brain purpose and sustain our physical health [10]. The most common causes of the sleep deprivation are related to modern lifestyle and work-related factors; thus, the condition affects considerable number of people [19]. The quality and quantity of sleep can have a strong impact on student's memory and learning. Considering the adverse effect of sleep deprivation on student population present study tries to find out the relationships among sleep deprivation, mental health and anxiety which have been confirmed through the results of current research study.

Conclusion

The conclusion of study titled "investigation on influence of exercise, diet, and sleep on mental health of student-athletes" emphasizes the vital role that balanced lifestyle plays in maintaining and improving mental health among student-athletes. The findings reveal that regular exercise, a nutritious diet, and adequate sleep contribute pointedly to falling stress, anxiety, and depression levels while enhancing the emotional well-being, focus, and overall psychological resilience. The study underscores that student-athletes who sustain healthy habits across these three domains experience better mental health outcomes than those who neglect one or more aspects. Besides, the interplay between exercise, diet, and sleep has the synergistic effect, where improvements in one area often lead to positive changes in others, thereby creating a comprehensive framework for mental health support. The research suggests that universities and athletic programs should prioritize promoting these lifestyle factors as part of student-athletes' well-being strategy, thus, encouraging a more holistic approach to both mental and physical health. This will not only help enhance athletes' performance but also improve their quality of life as desired by students in the diverse circumstances.

Recommendations

1. The colleges and athletic departments should develop and implement program that focus on balanced blend of exercise, proper nutrition, and sleep hygiene to support the mental health of student-athletes.
2. It offers personalized guidance and resources for student-athletes based on their explicit exercise routines, dietary needs, and sleep patterns, include access to dietitians, fitness coaches, and sleep notables.
3. There is a need to introduce regular mental health screenings and wellness assessments to identify early signs of mental health struggles related to the insufficient exercise, poor diet, or sleep deprivation.
4. It inspires coaches to be proactive in monitoring their athletes' lifestyle habits. Coaches should be trained to recognize the signs of deprived mental health and offer the support in creating balanced routines.

5. conducting research on relationship between lifestyle factors like exercise, diet and sleep and mental health to stay informed of latest studies to improve the well-being strategies provided to student-athletes.

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