https://doi.org/10.48047/AFJBS.6.16.2024.2649-2656

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

Evaluating Dietary and Lifestyle Habits and Their Association with Psychological Distress among Border and Non-Border University Students

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Volume 6, Issue 16, Dec 2024

Received: 15 Oct 2024

Accepted: 05 Nov 2024

Published: 29 Dec 2024

doi:10.48047/AFJBS.6.16.2024.2649-2656

ABSTRACT

Background

Mental health issues, including psychological distress, are prevalent among university students, negatively impacting their academic, social, and physical well-being. Poor dietary habits and unhealthy lifestyle behaviors such as low physical activity and internet addiction have been linked to mental health problems. However, research exploring these associations among university students, particularly in Pakistan, remains limited.

Objectives

To investigate the relationship between psychological distress, diet quality, physical activity, and internet addiction among undergraduate university students in Pakistan.

Methods

This cross-sectional observational study was conducted at public universities in Lahore, Pakistan, from September to November 2021, using a stratified random sampling method. Participants (n=400; aged ≥18 years) completed validated questionnaires assessing psychological distress (Kessler K10), diet, physical activity, internet addiction (IAT), and sleep quality (PSQI). Descriptive statistics, chi-square tests, and correlation analyses were performed using SPSS 23.

Results

Psychological distress was prevalent in both boarder (54.2%) and non-boarder (45.7%) students. Significant associations were observed between psychological distress and dietary habits (e.g., meal frequency, fruit/vegetable intake) and lifestyle variables (e.g., physical activity, sleep quality, internet addiction). Lower fruit and vegetable intake, poor sleep quality, and mild-to-moderate internet addiction correlated with higher distress levels. Residential status showed no significant association with psychological distress.

Conclusions

Diet quality and lifestyle habits significantly influence psychological distress among university students in Pakistan, irrespective of residential status. Findings highlight the need for longitudinal studies and targeted interventions to address mental health challenges and promote healthier dietary and lifestyle practices.

Keywords

Psychological distress, diet quality, physical activity, internet addiction, university students, Pakistan.

INTRODUCTION

The mental health of university students continues to grow in demand, and some research has found an increased prevalence of mental disorders among university students compared to the same age non-university adult population (Sharp and Theiler 2018). As shown by the World Mental Health International project, about 30% of university students have one or more mental health problems in a given year (Auerbach et al. 2017). There is a very high prevalence of other disorders most commonly associated with

mental health, such as stress and psychological distress in university students (Whatnall et al. 2019). Mental health is a significant consideration for young adults because of its damaging effects on academic performance, learning, the various relationships with friends and family, as well as its physical and vocational effects. According to one such research into psychological distress among university students, the survey was compared against the national statistics on peers who are not studying. It showed that 19 percent of students suffered from psychological distress compared to only 3 percent from their non-studying counterparts (Stallman 2010).

The increased prevalence of psychological distress among students seems to be related to the combination of psychosocial risk factors and lifestyle behavior (Firth et al. 2019). Indeed, poor diet has become the main cause of ill-health and premature death in the world, and the increasing burden of diet-related disease is straining our health systems beyond the limit (Micha et al. 2020). Poor quality diet, that is, less attaining of nutrient-rich food like fruits, vegetables, whole grains, nuts, fish, and higher energy-dense, nutrient-poor foods, is independently associated with increased rates of psychological distress (Banta et al. 2019; Taylor et al. 2020). So far, about 45 studies among university students have been done on the relationship between diet and mental health. Most of these studies involve western countries and the relationship of diet to stress, anxiety and depression. Findings of these studies show that they associate unhealthy diet with poorer mental health outcome. Studies by Tran, 2017, Wattick et al. 2018 originating from France, Canada and UK concluded that irregular meal patterns and low fruits and vegetable intake, with increased intake of added sugars, sweet and fast foods, increased the incidence of stress, anxiety and depression.

The most research on food-mental health associations tends to be in a general population or older adults, with some finding other health behaviors and sociodemographic factors such as age, BMI, smoking, activity level moderating those relationships between diet and mental health (Jacka 2017; Jacka et al. 2014). Furthermore, data from general population do not hold true for university students as they are a unique group for whom there are environment (social and personal) factors that differ from their life stage and setting (Munt et al. 2017). One study looked at the association between diet and psychological distress (Knowlden et al., 2016), and no research has looked into whether the combination of diet with lifestyle habits relates to psychological distress. This is an important literature gap that needs filling because of the very high incidence of psychological distress and poor lifestyle among university students themselves (Cheng et al., 2018; Peltzer and Pengpid, 2015). Also, none of such studies has ever been conducted in Pakistan among university students relating diet, lifestyle and psychological distress. The current study aimed to explore the association between psychological distress with diet intake, physical activity and internet addiction in sample of Pakistani university students.

METHODS

Design and place of the study

This was a cross-sectional and observational study developed according to the STROBE (Strengthening the reporting of observational studies in epidemiology) checklist. The sample size would be determined using an online sample size calculator, Raosoft, with 95% CI using a marginal error of 5% (2022). This study was carried out through several public sector universities of Lahore, Pakistan in periods between September to November, 2021.

Participants

To be eligible for this study the participants had to be present and studied within the age ranges of at least 18 years old. Participants who were diagnosed earlier with any chronic diseases were not included in the study. Informed consent was taken before the patient participated in this study. Stratified random sampling

technique was adopted to recruit medical undergraduates of universities non-medical undergraduates like business, law from the same universities were extracted. The universities were first conveniently selected. One academic department of a university formed one sampling frame in which participants were randomly selected. The number of participants selected from each cluster is proportional to the volume of the cluster. New knowledge for the study was approved by the Ethical Review Committee of University of Veterinary and Animal Sciences. Questionnaire filling was anonymous.

Variables

Participants filled out a questionnaire providing the following information about themselves: (1) age; (2) gender; (3) Accomodation status (boarder, non-boarder); (4) Height; (5) Weight; (6) Body Mass Index (BMI).

Dietary and Physcial activity

The dietary habits of students were assessed through questions regarding their intake of meals, breakfast, fruits, vegetable, dairy products, meat and meat products, fast food, soft drinks, tea/ coffee and water intake. The physical activity of students was assessed through questions within two activities domain (sports and leisure time). To measure physical activity level time duration and intensities of all activities were summed and compared with the reference ranges of WHO (World Health Organization) (WHO).

Internet Addiction

The internet addiction of participants was obtained by using Internet addiction test (Young 1998). The scale includes 20 Likert-type questions assessed on a 5-point scale (0=never, up to 5=always). The total score of the IAT ranges from 0 to 100. This test measures the severity of addiction and it mainly covers the impacts of internet usage on its users' daily routine, feelings, sleeping pattern, social life, and productivity. Young offers the score range for the addiction level as 0–30, normal; 31–49, mild; 50–79, moderate; and 80–100 points is the sever level of addictionThis test measures the level of addiction and it mainly covers the diverse effects of internet usage on its users' daily routine, feelings, sleeping pattern, social life, and productivity. The cutt-off score range for the addiction level as 0–30, normal; 31–49, mild; 50–79, moderate; and 80–100 points is the sever level of addiction (Young, 1998). In a meta-analysis study, scholars identified Young's IAT as a reliable tool for measuring internet addiction particularly among college students (Frangos et al. 2012).

Sleep quality

The sleep quality of participants was determined by using Pittsburgh Sleep Quality Index (Buysse et al. 1989). The PSQI includes seven components; sleep quality, sleep latency, sleep duration, sleep intensity, sleep disturbance, use of sleep medication and daytime dysfunction. The score of each subgroup ranges from 0 to 3. The sum of each subgroup yields a global subjective sleep ranges from 0 to 21. A score >5 is defined as poor sleep and a score of ≤5 is considered good (Lee et al. 2020).

Psychological distress

The Kessler Psychological Distress Scale (K10) was used to evaluate psychological distress. (Kessler et al. 2003). The scale was comprised of 10 multiple choice questions based on two emotional states (anxiety and depression). The respondent rate the items using 5-point scale (1=none of the time, 5=all the time). The total score ranged from 10 to 50, and a score of >19 was defined as indicative of psychological distress (Matheson et al. 2016).

Statistical Analysis

Descriptive analyses of demographic characteristics, dietary habits and occurrence of psychological distress, internet addiction, sleep quality and physical activity of boarder and non-boarder students were conducted in order to characterize the study's sample profile. The relationship between psychological distress (outcome variables) and the sociodemographic and dietary and lifestyle variables (predictor variables) was analyzed utilizing chi-square $p \leq 0.05$ as statistically significant. The All analyses were conducted using the IBM SPSS 23 software**.**

RESULTS

Participants Characteristics

Of 400 participants, 201 were boarder students and majority of students were female (71.1% of boarder and 65.8% of non-boarder). There was a relatively uneven spread of participants across early (18-20 years, 36.3% of boarder and 32.7% of non-boarder students) middle (21-25 years, 52.7% of boarder and 58.3% of non-boarder) and late (≥26 years, 10.9% of boarder and 9% of non-boarder) age group (Table 1). Most of participants were normal weight (56.2% of boarder and 53.8% of non-boarder) and a small percentage was obese (4.5% of boarder and 8.5% of non-boarder). Psychological distress was self-reported as mild (13.9% of boarder and 11.6% of non-boarder), moderate (10% of boarder and 14.1% of non-boarder) and high (54.2% of boarder and 45.7% of non-boarder). The dietary analysis showed that more than half (71.1% of boarder and 65.3% of non-boarder) were skipping breakfast, less than half (42.2% of boarder and 49% of non-boarder) were consuming more than two fruits a day, similar number were consuming vegetable and more than a quarter were consuming fast food once or twice a week (41.35 of boarder and 34.1% of non-boarder). More than half of participants (67.2% of boarder and 50.2% of non-boarder) had low physical activity and had mild (33.3% of boarder and 31.7% of non-boarder) internet addiction. There was a high prevalence of poor sleep quality (64.2% of boarder and 43.7% of non-boarder) in study participants. There was a significant difference among consumption of fruits, vegetables, dairy products, fast food, water, physical activity and sleep quality among boarder and non-boarder students.

Association of psychological distress and sociodemographic and dietary variables

Table 2 represents the association between psychological distress and sociodemographic, dietary and lifestyle variables. The psychological distress was shown to be significantly associated ($p \leq 0.05$) with age and BMI among both border and non-border students. The psychological distress was not significantly ($p=0.909$) associated with gender among border students. Among dietary factors frequency of meals, breakfast, vegetables fruits, dairy products, water and soft drinks was significantly associated with psychological distress among both border and non-border students but frequency of meat consumption showed association significant association among non-border students only.

The frequency of border and non-border students consuming one meal per day among them 94.7% and 100% had psychological distress. In comparison to those consuming 5 meals per day among them 100% of border and non-border students had no psychological distress. Border and non-border students consuming one vegetable per day among them 100% of border and 87% of non-border students had distress in comparison to 61.1% of border and 52.6% of non-border students consuming vegetables more than 4 times per week.

The sleep quality, internet addiction and physical activity showed significant association with psychological distress among both border and non-border students.

Association among dietary and lifestyle variables

The meal frequency had a weak positive correlation with breakfast consumption (p value = 0.001 and 0.000, r = 0.234 and 0.324) and even weaker association with fruits consumption (p = 0.001 and 0.002, r = 0.237 and 0.233) among border and non-border students. There was a weak correlation between soft drinks consumption with tea intake (p value = 0.000, r = 0.34 and 0.415) and internet addiction with sleep quality (p value = 0.000, r = 0.302 and 0.249) among border and non-border students (Table no 3). A weak negative association was observed between fruits consumption with soft drinks intake (p value = 0.000 and 0.001, r = -.272 and -.235). A moderate negative correlation was observed between soft drink consumption and breakfast intake (p value = 0.000, r = -.511 and -.502) among border and non-border students. The physical activity showed moderate correlation with sleep quality among border students (p value = 0.000, r = -.518) and weak correlation among non-border students (p value = 0.000, r = -.306) der and non-border students.

DISCUSSION

A high prevalence of psychological distress was observed among university students participated in this study. Chi-square analysis revealed a high prevalence of psychological distress in both border and non-border students despite of accommodation status. Lower prevalence of psychological distress was found among male non-border students than female non-border students. The prevalence of psychological distress was almost similar among male and female border students. Lower psychological distress was observed among students 26 years of age and greater in comparison to students of 18-20 years and 21-25 years of age in both border and non-border students. The psychological distress had a significantly higher prevalence among underweight, overweight and obese students. Lower fruits and vegetable intake was associated with higher prevalence of psychological distress among border and non-border students. The findings are in accordance with other observational studies on fruits and vegetable intake and mental health conditions (Cheng et al. 2019; Nguyen et al. 2017). An exception to this is a study in Canada where the association between consumption of fruits and vegetable and depressive symptoms was attenuated overtime (Kingsbury et al. 2016).

CONCLUSION

This study examined the association of lifestyle habits and psychological distress amongst undergraduates university students of Pakistan. Findings suggest a potential association between diet quality and psychological distress among students. The residential status of students showed insignificant association with psychological distress. Therefore, our assumptions that residential status might be a cause of psychological distress were not proved, however more comprehensive longitudinal studies should be conducted to untangle the association of complexities of accommodation status and psychological distress. Additional prospective studies with more precise dietary assessment methods are warranted to further clarify the association of psychological distress and lifestyle habits.

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