



Social Sciences & Humanity Research Review



EVENING CHRONOTYPE, SLEEP QUALITY, AND MENTAL DISTRESS IN UNIVERSITY STUDENTS

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ARTICLE INFO

Keywords: Evening

Chronotype, Sleep Quality,
Mental Distress

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ABSTRACT

The present study was designed to assess the relationship between evening chronotype, sleep quality, and mental distress in university students. A sample of 285 (142 Male and 143 Female) was chosen using the purposive sampling approach from different universities of Faisalabad. The Morningness-Eveningness Questionnaire (MEQ), The Sleep Quality Scaled and Psychological Distress Scale used for data collection. SPSS 26 was used to analyse the data, and a cross-sectional research design was used. Results indicate that evening chronotypes with sleep quality has negative correlation and positive correlation with mental distress. This implies that preferring staying up late may hinder sleep, which may then lead to increase psychological distress. The results also showed that sleep quality is a significant predictor of mental distress of university students. Results revealed that sleep quality is not a significant moderator between evening chronotype and mental distress among university students.

INTRODUCTION

Night owls or evening chronotype relates to people who have the body's circadian rhythm, which is synchronized to be wide awake during the evening and night periods. These people known as "night persons" have an inherent propensity to be at their best, go to bed and be awake, in the night. Some people are programmed in a way that their best mental and physical abilities are during the later hours of the day, literally at night. This biological disposition occurs on the basis of the body's circadian rhythms that act like master clock

in controlling such things as the sleep wake cycle and other physiological functions (Zheng et al., 2022). Evening chronotypes experience chronic sleep deprivation and nonregular sleep patterns that can worsen mental illnesses leading to a feedback loop of bad emotional wellbeing. Early management of sleep disturbances associated with chronotype is important to reduce the likelihood of developing mood disorders and in improving overall mental health (Kivelä et al., 2018). The study of evening chronotype has broad significance for the understanding of human behavior, health, and wellbeing. The significance of chronotype is starting to be conveyed with a growing wealth of research demonstrating biological, psychological, and environmental influences on eveningness, and there is an impediment to consider the consequences of chronotype, in daily working. Knowing how your body clocks are linked to your chronotype can help you with a healthy sleep hygiene, improve performance and promote good mental health due to decreasing social jetlag or circadian misalignment's detrimental effects (Zou et al., 2022). Sleep significantly depends on biological factors. For example, age is important; people get older and their sleep architecture changes, by having less deep sleep and more wakeups. Likewise, there are differences between sleep patterns among men and women, though not as stark as differences in health or lifestyle (such as diet) or employment. Women, for instance, are often plagued by more sleep disturbances related to changes in hormones associated with menstruation, pregnancy, and menopause (Li et al., 2018). Stress, anxiety and depression all have a big impact on the quality of sleep. Poor sleep quality can come from high stress levels which make falling asleep and maintaining sleeping difficult. Restless nights due to anxiety are indicated by lots of awakenings and short time in sleep. Often insomnia or hypersomnia that negatively affects sleep quality acquires parenthood with depression. Better stress and mental health care is key to helping your sleep be of better quality. They're all lifestyle choices and habits. Poor sleep can be caused by an irregular sleep schedule, too much or too little alcohol or caffeine, and a sedentary lifestyle (Medic et al., 2017). Sleep quality is defined as an individual's sleep quality, which includes an amount of time to go to sleep, how long someone sleeps, how deep they sleep and how much rested someone feels after being awake (Azhar, 2024; Azhar & Imran, 2024; Azhar, et al., 2022). This past century sleep quality has been scrutinized in depth, the first examinations of sleep focusing on their physiological aspects i.e., different stages of sleep (REM – Rapid Eye Movement; and non-REM), etc. Technology at the mid-20th century including the making of electroencephalogram (EEG) helped to explain some understanding of how sleep affects your body and may be a better understanding of being tagged with a brain wave during sleep. More recently, the focus has remained on understanding psychological, behavioral, and environmental factors that influence sleep quality, and the development of standardized measures of the same (Nelson et al., 2022). Mental distress is a state of emotional suffering which is usually described by the symptoms such as anxiety, depression and emotional instability. It refers to a grouping of different psychological conditions that interfere with the person's ability to perform regular tasks. It can be any symptom, such as persistent sadness, or excessive worrying, or irritability, or just fatigue, or difficulty concentrating, that you can keep on a sort of mental distress (Sohail-Rehan, & Ul-Haq, 2018; Haq, 2017; ul Haq, 2012). It is a wide term encompassing the experience of mental health struggles in all its temporary and chronic, mild, and severe forms (Belay et al., 2021). Relationships and support networks are important both in preventing or in exacerbating mental distress, and social factors are important in either (Azhar, 2024; Azhar & Imran, 2024; Azhar, et al., 2022). Family, friends and community have strong social support and this emotional assistance and practical help can reduce the impact of distress. In contrast, social isolation, loneliness and decrepit relationships can be exacerbating of distress (Parveen, et al., 2020; ul haq, 2019;

Ali & Haq 2017). In addition, mental health struggles are greatly influenced by experiences of social exclusion, bullying, and/or discrimination. Mental distress is strongly influenced by the environmental factors (including living and work conditions). High job demands, loss of work, and poor work life balance are used as work-related stressors which leads to both burnout and mental exhaustion (Tindle et al., 2022). Mental distress includes an enormous range of emotional and psychological issues that interfere with daily functioning, such as anxiety, depression, and stress. However, mental distress has been well known for centuries but understanding and treatment have come very far. In ancient civilizations, mental distress was blamed on their supernatural forces or moral failings, and was treated with exorcism or isolation. It wasn't until the Renaissance and Enlightenment periods that people started to look at how the body and the mind were connected, making it a matter of scientific discussion surrounding mental health. In the modern era it is as we have shifted to acknowledging mental distress as a sickness that can be cured with the right interventions, the same as a remedy, therapy, medicine, and community support (Stein et al., 2022). Symptoms of mental distress are different from mental illness; while distress denotes short lived troublesome emotions which are very much common with the general population, mental illness refers to clinical diseases of the mind which may be chronic and require sustained treatment (Azhar, 2024; Azhar & Imran, 2024; Azhar, et al., 2022). The effective focus on increasing mental health literacy means that people accept mental suffering as a rational reaction to the hardships that people face in society (Halat et al., 2023). Society also plays a role in amplifying mental distress since individuals are always expected to behave in a certain way. The society is characterized by a sense of high expectancy of achievement and temporal and spatial mobility leading to distress in the society in different cases. These pressures produce an ongoing state of low self-esteem status since no one is able to meet these high standards (Jaleel, & Sarmad, 2024; Jalil, Sarmad, & Shafi, 2023; Muhammad, et al., 2020). The essential pressures have also been enhanced through social media influence where users' subject themselves to comparison with the polished and at times exaggerated influence portrayals promulgated online, thus escalating feelings of distress (Dejonckheere et al., 2022). Mental health concern is a general phenomenon that is compounded of biological, psychosocial and emotional factors (Kayani, et al., 2023; Khan, et al., 2021; Naseer, et al., 2021; Khan & Khan, 2020). It has further multiple effects on the subject of focus and subsequent social results. Also identifying and working to eradicate the causes of mental ill health through counseling, medications, healthy living or social support is something that needs to be encouraged. Increasingly, as [mental distress] is recognized, there will be hope that people will feel able to ask for help, or be able to learn how to be more resilient, in the face of life's challenges and adversities (Gautam et al., 2024).

Rationale of the Study

The academic requirements combined with social life activities along with daily choices make university students more prone to disturbances in their sleep-wake patterns. Studies now demonstrate that evening chronotypes which represent people who stay late into the night prefer late risings show worse sleep quality than morning chronotypes. Inconsistent research has shown that poor sleep quality leads directly to several psychological problems which include anxiety disorders along with symptoms of depression and profound emotional pain. Students who possess evening chronotype sleep patterns combined with poor sleep quality face greater mental distress which interferes with their ability to handle academic demands and preserve their psychological health. The research intends to address this knowledge gap through investigation of relationships between chronotype preference and sleep quality and mental distress experienced by university students.

Hypotheses

1. There will significant correlation between evening chronotype, sleep quality and mental distress in university students.
2. Sleep quality moderates the relationship between evening chronotype and mental distress in university students.

LITERATURE REVIEW

Physical health and mental health depend substantially on sleep quality because it affects multiple dimensions of daily activities as well as psychological health (Jaleel, Rabbani, & Sarmad, 2025; Ali, et al., 2020; Ahmad, 2018). A poor sleep quality defined by reduced quantity and poor continuous sleep patterns together with a lack of restful slumber negatively impacts the academics and emotional state and psychological well-being of university students (Naseer, et al., 2024; Shah et al., 2023; Aurangzeb, & Haq, 2012). The data shows that people with evening chronotype patterns face increased chances of getting sleep problems that lead to mental health issues (Danish, Akhtar & Imran, 2025; Mankash, et al., 2025; Hafeez, Yaseen & Imran, 2019). A thorough examination of this review investigates the ways sleep quality moderates evening chronotype's link to mental distress at universities while describing methods to enhance sleep which reduces mental distress outcomes (Alnawwar et al., 2023).

The evening chronotype shows a direct connection to bad mental health results through studies in science (Shaukat, et al., 2020; ul Haq & ur Rehman, 2017). Research finds that evening chronotype people have increased chances of developing mental disorders with signs of anxiety depression and stress. University students encounter demanding tasks at school and work that lead to more sleep disruptions and worse mental well-being especially among those who prefer evening sleeping hours (Shah, Qazi & Khan, 2025; Naseer, Rehan & Shah, 2024; Malik, Hanif & Elahi, 2025). University students with evening chronotype schedules who must wake up early suffer repeated sleep loss that intensifies their mental health problems. Evening-type students developed worse mental health problems than morning types. Learning to identify and help evening chronotypes early will stop mental health problems from arising in the future (Wang et al., 2022).

Biological characteristics affect how mental stress develops between people who prefer evening activities (Khoso, et al., 2024; Sultana & Imran, 2024; Ahmad, Bibi & Imran, 2023). Evening chorotypes demonstrate improper cortisol release which interferes with their capacity to handle stress and keep emotional equilibrium. Our bodies work improperly to enhance mental health problems so experts must provide complete care that targets sleep and stress control (Gamble et al., 2014).

People with evening chronotype face worse mental health when they use poor mental health coping methods plus isolate socially (Khan & Haq, 2025; Haq & Khan, 2024). Study found that people who go to sleep and wake up late (night owls) increase their psychological distress when they avoid tasks and put off important work. Because of this research outcome interventions should teach better sleep routines alongside better ways to handle stress and build strong networks of support (Selvi et al., 2017).

It is well known that evening chronotype is related to poor sleep quality. Misalignment of biological and societal schedules seems to result in delayed sleep onset, fragmented sleep, and short sleep duration in evening chronotype individuals. It is a major contributor to poor sleep quality and the consequent mental health effects of poor sleep quality (Concepcion et al., 2014).

Generally, individuals are found to have poorer quality sleep if they are evening chronotype as opposed to morning types. Evening chronotypes often experience longer time to fall asleep, frequent nighttime awakenings, and unrefreshing sleep due to a mismatch between their natural sleep patterns and societal routines. Similarly, Diaz-

Morales et al. (2013) demonstrated evening chronotype students carried out more sleep disruptive behaviors i.e., caffeine consumption and late-night screen use, exacerbating sleep quality issues Roeser et al. (2012).

Social jetlag, the concept introduced for the chronic sleep deprivation experienced by evening chronotype individuals because of no correspondence of social and academic schedules with their active time, features prominently in this paper (Iqbal, Shah & Abid, 2025; Ivascu, et al., 2022; Ghulam, et al., 2019). In addition, this misalignment also decreases sleep duration and quality which results in increased daytime sleepiness and general decreased wellbeing Wittmann et al. (2006).

There is a well-documented bidirectional relationship between sleep quality and mental distress. A poor sleep quality is a cause as well as a consequence of mental health problems, like anxiety, depression and stress, all leading to a one-way vicious cycle. Disentangling the relationship between sleep and mental health is important for gaining an understanding of the best kinds of interventions to improve both sleep and mental health outcomes (Yasugaki et al., 2025).

University students are known to have poor sleep quality and find it associated with psychological distress, such as symptoms of depression, anxiety, and stress. Problems with sleep hygiene accounted for the improvement in both their sleep quality and mental health. Scott et al (2021) in a meta-analysis identified that intervention to improve sleep quality are lucky to reduce depression symptoms, anxiety symptoms, and rumination symptoms with medium sized effects. This suggests that sleep improvement strategies should be incorporated into mental health services Rezaei et al. (2018).

Investigated that sleep quality is also a moderator in the relation between chronotype and mental distress. Poor sleep quality amplifies the deleterious impact of evening chronotype on mental health and good sleep quality dampens this effect. This strengthens the notion that while evening chronotype people may not suffer from more mental distress, they are already at risk of worsening overall mental distress through worsening sleep quality Chauhan et al. (2024).

University students with poor sleep quality are more likely to experience increased stress and emotional difficulties. Academic and social pressures negatively affect both their sleep and mental health, highlighting the need for interventions that promote healthy sleep habits and help manage daily stressors. Harvey et al. (2011) explained how problems with REM sleep affect emotional control and lead to greater mental suffering. Cheng et al. (2020) revealed that stress from work increases when sleep quality is poor and decreases workplace resilience which proves why sleep programs benefit mental wellness Alotaibi et al. (2020).

RESEARCH METHODOLOGY

Research Method

Research Design

This study used a cross-sectional research design in order to collect data from university students at a single time point.

Sampling Technique

The study used a convenient sampling technique, which is a type of non-probability sampling.

Inclusion vs Exclusion Criteria

Inclusion Criteria

1. Enrolled university students aged 18-30.
2. Willingness to participate and provide informed consent.
3. Ability to read and understand the survey questionnaires.

Exclusion Criteria

1. Students with diagnosed sleep disorders or severe mental health conditions currently under treatment.
2. Students who are not currently enrolled in university courses.

Trust and Rapport with Participants

It is vital to remember that building trust and rapport with respondents is essential for doing effective research. It was additionally critical to create a good rapport with the subjects before to administering the psychological tests. The investigator introduced herself to the assessment participants and discussed and outlined what was going on with the goal of the inquiry (Khan, Haq, & Naseer, 2022; Shaukat, Rehman, & ul Haq, 2021). The researcher also notified people who took part in the study that the psychological evaluations would be kept private. During the administration of the psychological tests, the investigator positively replied to and explained each participant's concern and question. Participants were promised that they would receive any information they sought on this subject.

Ethical Considerations

In this study, the following ethics was considered. The complete information regarding the questionnaire and topic was explained to the participants. The dignity of the research participants was prioritized. Informed consent was also be obtained from the participants to take part in the research. The participants and their data were ensured to be confidential.

Measures

Evening Chronotype Scale

The Morningness-Eveningness Questionnaire (MEQ) 19 items scale developed by Horne and Östberg (1976) remains one of the most extensively used methods for circadian preference assessment. It is a four-point Likert scale. The evaluation yields a scores between 16 and 86 with higher results showing morning dominance and lower results indicating evening dominance. The MEQ maintains strong reliability because Cronbach's alpha ranges from 0.82 to 0.90 while multiple validity checks between 0.82–0.90 demonstrate its stability across brief periods. Construct validity exists in the MEQ because it demonstrates significant relationships between its results and biological indicators of circadian rhythms including melatonin secretion levels and core body temperature measurements. Tests against different chronotype instruments including the Munich Chronotype Questionnaire produced positive results. The MEQ proves suitable for scientific research and clinical use due to its combination of robust validity and reliability measures.

Sleep Quality Scale

The Sleep Quality Scale (SQS), developed Yi et al. (2006), includes 28 items aimed at thoroughly evaluating different aspects of sleep quality, such as daytime symptoms, restorative sleep, difficulties with falling and staying asleep, challenges in waking up, and overall satisfaction with sleep. This scale is validated for individuals aged 18 to 59 and is presented as an easy self-report questionnaire that takes roughly 5 to 10 minutes to fill out. The creators of the scale intended to develop a practical instrument that is appropriate for both clinical evaluations and research applications, demonstrating strong internal consistency (Cronbach's alpha = 0.92) and commendable test-retest reliability (0.81). Scores are derived from a four-point Likert scale, where higher scores indicate more significant sleep disturbances. The SQS serves as a useful tool for assessing sleep quality in various populations, offering valuable insights into sleep-related problems that affect daily functioning and overall health.

Psychological Distress Scale

One of the most commonly used tools is the Kessler Psychological Distress Scale

by Kessler et al. (2003) to assess nonspecific psychological distress, that is anxiety or depression-like symptoms. The scale contains 10 questions with responses in a Likert scale from 1 (None of the time) to 5 (All of the time). Scores range from 10 to 50 and higher scores mean greater levels of psychological distress. The psychometric properties of the K10 have shown to be strong. This high internal consistency has Cronbach's alpha values frequently exceeding 0.90 across populations, meaning that it is excellent in reliability. This K10 scale was adopted for assessment due to its effectiveness in capturing psychological distress symptoms, which are central to the study's objectives.

Procedure

After the necessary consent has been obtained, participants were selected using the previously described sampling approach from multiple universities of Faisalabad through direct outreach. Surveys were administered. At first, rapport was established with them. Then written informed consent was obtained and participants were informed about the study's purpose. They were assured of confidentiality and were informed that they can withdraw from the study at any time. To ensure consistency in the methods, the measures were administered using standardized instructions suggested by the authors. A "questions/answers session" was follow the testing, which was last for 35- 40 minutes. Data analysis, including regression analysis and Pearson Product Moment Correlations, were conducted using the Statistical Package for Social Sciences (SPSS v-27).

Statistical Analysis

Statistical calculations for the study were conducted using SPSS version 27. To analyze the relationships and predictors of the outcomes, a combination of descriptive and inferential statistics was applied, which included Pearson Product Moment correlation, regression analysis, independent sample t-tests, and analysis of variance. The data analysis was carried out with the Statistical Package for Social Sciences (SPSS) version.

RESULTS

Table 1

Frequencies and percentages of demographic variables of Study (N = 285)

Variables	Category	N	%
Gender	Male	142	49.80
	Female	143	50.20
Age	18-24	135	47.40
	25-30	150	52.60
Marital Status	Married	24	08.40
	Unmarried	261	91.60
Education Level	BS/MSc	131	46.00
	MS/MPhil	154	54.00
Family Structure	Joint	145	50.90
	Nuclear	140	49.10
Economic Status	Lower Class	84	29.50
	Middle Class	115	40.40
	Upper Class	86	30.20
	Total	285	100.0

Note. F = Frequency, % = Percentage

The demographic characteristics of the sample size (N = 285) reflect that the majority of the sample, 49.8%, were males and 50.2%, were females. In terms of age, the most participants (52.6%) were between 25 and 30 years old, while the rest, 47.4%, were between 18 and 24 years old. Nearly 91.6 percent were unmarried and only 8.4 percent

were married in terms of marital status. The education level distribution shows that 54% where with MS/MPhil degrees, 46% were BSc/MSc. There was almost an equal number of people from joint families (50.9 per cent) and nuclear families (49.1 per cent). As for the economic status, the amount claimed most of the participants (47.7%) were middle class, followed by lower class (29.8%), and upper class (29.5%).

Scales	<i>M</i>	<i>SD</i>	<i>A</i>	Range
Morning Eveningness Scale	39.49	4.60	.72	29-54
Sleep Quality Scale	54.65	10.9	.80	33-81
Psychological Distress Scale	26.87	3.41	.71	17-36

Table 2

Variables Descriptive Statistics and Scale's Reliability Analysis (n = 285).

Note. M = Mean, SD = Standard Deviation

Key insights into the data received from the descriptive statistics and reliability analysis of the study variables (N = 285). The scores of participants on the Morning-Eveningness Scale were 39.49 (SD = 4.60) with good internal consistency ($\alpha = .72$). The mean of the Sleep Quality Scale was 54.65 (SD = 10.9), and it was very reliable ($\alpha = .80$). The mean for Psychological Distress Scale was 26.87 (SD = 3.41; $\alpha = .71$). Generally, the scales are reliable, and are also in ranges acceptable for statistical analysis.

Table 3

Bivariate Correlation between Evening Chronotype, Sleep Quality, and Mental Distress among University Students.

Sr	Variables	<i>N</i>	<i>M</i>	<i>SD</i>	1	2	3
1	Evening Chronotype	285	39.49	4.60	-		
2	Sleep Quality	285	54.65	10.9	-.11*	-	
3	Mental Distress	285	26.87	3.41	.45**	-.17**	-

*Note. *p < .05, **p < .01*

The bivariate correlation analysis looks at the relationships between evening chronotype, sleep quality and mental distress in university students. Results indicate that among evening chronotypes, poorer sleep quality ($r = -0.11$, $p < .05$) and increased levels of mental distress ($r = 0.45$, $p < .01$) are experienced. This implies that preferring staying up late may hinder sleep, which may then lead to increase psychological distress. Also, a negative correlation between sleep quality and mental distress ($r = -0.17$, $p < .01$) means that people tend to have lower distress levels if they have better sleep quality.

Table 4

Summary Of Linear Regression Analysis with Sleep Quality Predicting Mental Distress Among University Students.

Variables	<i>B</i>	β	<i>SE</i>
Constant	29.77**		1.07
Sleep Quality	-.053**	-.171	.018
<i>R</i> ²	.029		

Note. ** $p < .01$, *B* = Unstandardized coefficient

The results of the regression analysis between Sleep Quality and Mental Distress of university students indicate that Sleep Quality is a major predictor. Thus, results that used the unstandardized coefficient ($B = -0.053$, $p = .00$) indicated that poorer sleep quality was correlated with higher mental distress. The negative relationship between the variable and the standardized beta ($\beta = -0.171$) is strong. The model is statistically significant ($F = 8.47$, $p = .00$) and is able to explain 2.9% of the variance ($R^2 = .029$, $\Delta R^2 = .026$) in mental distress. It is of critical importance to sleep quality for mental well-being of students with these findings and interventions to improve sleep might reduce mental distress.

Table 5

Sleep Quality as Moderator between Evening Chronotype and Mental Distress among University Students.

Variables	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Sleep Quality	-.296	.148	-1.99	.00	(-.588, -.003)
Evening Chronotype	-.026	.203	-.128	.89	(-.983, 1.67)
Interaction	-.000	.009	-.044	.80	(-.000, .014)

Note. $R^2 = .225$

The purpose of the analysis is to determine whether the relationship between evening chronotype and psychological distress in university students is moderated by sleep quality. Psychological distress explained by the model ($R^2 = .225$) equals 22.5%. The sleep quality predicts distress significantly ($\beta = -.296$, $p = .00$), meaning lower quality of sleep correlates with higher distress. However, distress ($\beta = -.026$, $p = .89$) does not have a significant direct effect according to evening chronotype. Besides that, for this non-significant interaction term ($\beta = -.000$, $p = .80$) can be assert that sleep quality is not a significant moderator on distress and evening chronotype. These results provide evidence that sleep quality has a strong effect on psychological distress but plays no role in the way that evening chronotype is associated with distress in this sample.

DISCUSSION

The first hypothesis of the study was there will be a negative relationship between evening chronotype and sleep quality among university students. The findings revealed that there is a significant relationship between evening chronotype and sleep quality among university students. It appears that there is a strong positive relationship between the evening chronotypes and the sleep quality of university students; it seems that the people who are to get awake and active later at night (the evening chronotypes) are much more likely to suffer the poorer sleep, than those with either a morning or intermediate chronotype. In light of the fact that most college students have very irregular schedules, are at the bottom of their academic game, and still need to maintain a social life, this relationship is especially applicable to university students. As teenagers program themselves for bed at 2 a.m. instead of 2 p.m., they may find it difficult to align their natural sleep wake preferences with what feels like morning time commitments like

classes and exams and thus not sleep enough or shallowly. Quality of sleep has been shown to influence academic performance, mental health, and general well-being as well as psychological adjustment in adolescence (Khan et al., 2024).

This finding is supported by research which shows that evening chronotypes face difficulties in maintaining adequate healthy sleep patterns. Tavernier and Willoughby (2014) found that college students with evening chronotypes also reported significantly worse sleep quality, longer sleep latency, and more daytime sleepiness than college students with morning chronotypes. Key contributing factor to these sleep disturbances due to misalignment between natural circadian rhythms and societal demands was identified. In the same vein, Taylor et al. (2011) showed that evening types were more likely to experience insomnia symptoms and decreased sleep efficiency when their appointments do not conform their bodily preference. Taken together, these findings highlight how issues related to chronotype can be addressed in the university setting.

The second hypothesis of the study was there will be a positive relationship between evening chronotype and mental distress among university students. The result on the correlation table revealed that evening chronotype and mental distress has significant positive relationship with each other. This finding that morning chronotype and mental distress are related in a high positive way indicates that those individuals who are morning chronotype (i.e., they prefer to stay awake and active in the evening) are more likely to report increased levels of mental distress (anxiety, depression, or general psychological discomfort). Particularly for university students who are subject to academic pressures, irregular schedules, and social obligations, this relationship takes on an important significance because it can worsen the difficulties typical of being an evening chronotype. Increased stress, emotional instability and mental health issues could result from their impaired ability to synchronize their natural circadian rhythms with societal demands, for instance, early morning classes or work commitments (Zhu et al., 2022).

This has been backed up by the research which have proven to put evening chronotypes in psychological strains. A study conducted by Au and Reece (2017) reported that evening chronotypes were highly likely to suffer from depression and anxiety symptoms than morning chronotypes. They proposed that social jet lag, the discrepancy between a person's biological rhythms and their social obligations, is an important factor in elevating mental distress among them. Evening chronotypes had a higher tendency for mood disorders, as well as emotional instability, if their sleep schedule was opposed to the natural preference. These findings emphasize the need to focus on the treatment of chronotype related mental health issues in the population with demanding timetable, for example, university students Levandovski et al. (2011). Wittmann et al. (2006) also noted that evening chronotypes were more vulnerable to psychological distress because they have had to inappropriately conform in social and environmental settings to early schedules incompatible with the inherent sleep patterns. Together these studies indicate that the psychological burden associated with evening chronotypes are not mitigated by interventions that simply shift flexible work hours, but rather by such interventions as flexible scheduling and mental health support that accommodate individual chronotypes.

The next hypothesis of the study was there will be a negative relationship between sleep quality and mental distress among university students. Findings revealed that sleep quality is a significant negative correlated with mental distress. This finding that sleep quality is significantly negatively correlated with mental distress, therefore, indicates that those who experience better sleep quality are less likely to suffer mental distress, e.g. anxiety, depression, or general psychological hassle. On the other hand, high levels of mental distress are linked to

poor sleep quality. Yet this relationship makes it all the clearer just how crucial sleep is to mental wellbeing; even missing or disrupted sleep can lead to emotional dysregulation, increases in stress, and the intensification of symptoms. Poor sleep quality is a problem for higher education students (or for anybody, for that matter), who are likely to have lots in parallel, so this finding is especially relevant in educational settings (Taylor & Hasler, 2018).

There's consensus in research that sleep quality is linked to mental distress. A study by Baglioni et al. (2011) showed that poor sleep quality was greatly linked to high levels of symptoms of depression and anxiety. The researchers stressed that lack of sleep can negatively impact cognitive and emotional functioning and leave people more vulnerable to psychological distress. Much in the same way, Alvaro et al. (2013) suggested that poor sleep quality among university students is associated with higher stress and poorer overall wellbeing. It showed how poor sleep can amplify the mental distress, and can lead to both – mental distress causing poor sleep, and poor sleep – exacerbating mental distress, creating a vicious cycle.

The fourth hypothesis of the study was sleeping quality will moderate the relationship between evening chronotype and mental distress among university students. Results revealed that sleep quality is not a significant moderator between evening chronotype and mental distress among university students. Thus, this finding that evening chronotype does not moderate the effect of sleep quality between evening chronotypes and mental distress suggests that evening chronotypes are not more prone to have higher levels of mental distress and poorer sleep quality, while poorer quality of sleep does not influence the strength of the relationship between chronotype and mental distress among university students. In essence, this means that there is no significant difference between the relationship of being an evening chronotype and experiencing mental distress based on the quality of sleep. That indicates that instead of social jet lag, academic pressures, or lifestyle habits for example, evening chronotypes face mental health challenges because other factors are involved (Zhou et al., 2020).

Similarly, Taylor et al. (2011) found that evening chronotypes who exhibited mental distress were more likely than individuals characterized by a different combination as having experienced the cumulative effect from irregularity of sleep patterns, academic stress and lifestyle choices over amount of sleep quality. Taken together, these studies imply that while sleep quality is important independently for health, evening chronotype does not seem to be strongly associated with mental distress as an expression of clocks.

CONCLUSION

Results indicate that evening chronotypes with sleep quality has negative correlation and positive correlation with mental distress. This implies that preferring staying up late may hinder sleep, which may then lead to increase psychological distress. Also, a negative correlation between sleep quality and mental distress means that people tend to have lower distress levels if they have better sleep quality. The results also showed that sleep quality is a significant predictor of mental distress of university students. Results revealed that sleep quality is not a significant moderator between evening chronotype and mental distress among university students.

RECOMMENDATIONS

The Universities from Faisalabad provided the sample for the current study. It would be better to choose the sample in the future from more various places. The study's use of just self-reported data for analysis, which can be biased, is another drawback. The interview method can also be utilized to obtain a more thorough and in-depth understanding of a phenomenon. Purposive sampling produced the sample. To provide a fair and accurate sample representation, future studies should use random sampling.

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