



## Work Stress, Sleep Disturbances, And Quality Of Life In Working University Students

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### **Abstract**

**Keywords:**  
*employed  
university  
students; quality of  
life; sleep  
disturbance; work-  
related perceived  
stress*

*The pressure of juggling work responsibilities and academic commitments results in increased stress levels, problems with sleep and sub-optimal quality of life. This study examined the relationship between work-related perceived stress (WRPS), sleep disturbances (SD), and quality of life (QOL) among working university students. A total of 287 working Pakistani students (72 men, 215 women) participated in this study and were selected using a purposive sampling technique. Data were collected using the Perceived Stress*

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*Scale ( $\alpha=0.81$ ), PROMIS Sleep Disturbances Short Form ( $\alpha=0.88$ ), and Quality of Life Scale-16 ( $\alpha=0.92$ ). The results showed that WRPS is significantly correlated with SD ( $r=0.397, p<0.01$ ) and negatively correlated with QOL ( $r=-0.193, p<0.01$ ). Multiple linear regression analysis reveals that SD and QOL are predictors of WRPS. It also confirms that SD is a significant moderator in WRPS and QOL's relationship, and the interaction variable (SD\_QOL) is also significant. The findings emphasized the importance of balancing work and academics to reduce stress and improve students' overall quality of life. Further research should investigate specific stressors and their impact on sleep disturbances and the quality of life.*

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### Abstrak

**Kata kunci:** mahasiswa yang bekerja; kualitas hidup; gangguan tidur; persepsi stres terkait pekerjaan

Tekanan untuk memenuhi kewajiban pekerjaan dan tugas sekolah mengakibatkan peningkatan stres, masalah dengan tidur, dan kualitas hidup yang kurang optimal. Penelitian ini berfokus pada hubungan antara persepsi stres terkait pekerjaan, gangguan tidur, dan kualitas hidup pada mahasiswa yang bekerja. Sebanyak 287 mahasiswa yang bekerja (72 laki-laki, 215 perempuan) berpartisipasi dalam penelitian ini dan dipilih dengan Teknik *random purposive sampling*. Data dikumpulkan dengan menggunakan *Perceived Stress Scale* ( $\alpha=0.81$ ), *PROMIS Sleep Disturbances Short Form* ( $\alpha=0.88$ ) dan *Quality of Life Scale-16* ( $\alpha=0.92$ ). Hasil penelitian menunjukkan bahwa persepsi stres terkait pekerjaan berhubungan positif dengan gangguan tidur ( $r=0.397, p<0.01$ ) dan berhubungan negatif dengan kualitas hidup ( $r=-0.193, p<0.01$ ). Analisis linear berganda menemukan bahwa gangguan tidur dan kualitas hidup merupakan prediktor dari persepsi stres terkait pekerjaan. Analisis juga mengonfirmasi bahwa gangguan tidur merupakan moderator antara hubungan stres terkait pekerjaan dan kualitas hidup dan interaksinya (SD\_QOL) juga ditemukan signifikan. Temuan ini menekankan pentingnya menyeimbangkan karier dan akademik untuk mengurangi stres dan meningkatkan kualitas hidup secara umum pada mahasiswa. Penelitian selanjutnya perlu berfokus pada penyebab stres yang spesifik dan dampaknya terhadap gangguan tidur dan kualitas hidup.

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### How to cite this (APA 7th Edition):

Khatoon, H., Arshad, A., Khan, M. L., Noor, A., Mustafa, F., & Tahir. (2024). Work Stress, Sleep Disturbances, And Quality Of Life In Working University Students. *Academic Journal Of Psychology And Counseling*, 5(1). 3-30. <https://doi.org/10.22515/ajpc.v5i1.7691>

## INTRODUCTION

### *Background Of The Study*

Work-related stress is a global issue that affects Asian countries as well (Eskildsen et al., 2017). Many studies have highlighted the link between work-related stress, psychological disorders, and sleep disturbances (Zhang, Peters & Chen, 2018; Jowkar et al., 2022; Lee, Rauktis & Fusco, 2022; Mishra et al., 2022; Lund et al., 2010; Doolin et al., 2018). Work-related stress is a process in which a person perceives job demands to exceed their coping capacity, subsequently negatively impacting their psychological and physiological well-being (Eskildsen et al., 2015). Perceived work-related stress refers to the degree to which our life situations are interpreted as disorganized and troublesome (Cohen, Kamarck, & Mermelstein, 1983). Symptoms include fatigue, tension, somatic complaints, anxiety, feelings of sadness, and sleep disturbances (e.g., struggling to fall or stay asleep) (Dalgaard et al., 2014; Willert, Thulstrup & Bonde, 2011). Moreover, job stressors and social support in the workplace can shape psychological and physical stress responses by influencing sleep disturbances (Shimura et al., 2018). In students, perceived work-related stress can hurt their well-being and academic pursuits (Kinman, 2014).

A meta-analysis by Al Maqbali, Al Sinani, & Al-Lenjawi (2021) confirmed a significant association between work-related stress and sleep disturbances. Sleep disturbance encompasses ongoing challenges in initiating sleep, frequent awakenings, and the inability to resume sleep (Nordin et al., 2023; Sivertsen et al., 2009). The issues with sleep quality, timing, and quantity, can lead to daytime distress and impaired functioning (APA, 2022). Sleep disturbances have been linked to both physical and emotional problems and have adverse outcomes for individuals and society (Zhou et al., 2020). These effects include problems in cognitive functioning (Killgore, 2010), increased susceptibility to serious physical conditions (Anothaisintawee et al., 2016; Canivet et al., 2014), and psychological disorders (Cox & Olatunji, 2016; Steiger & Pawlowski, 2019). Sleep disturbance is a major public health concern affecting people of all age groups, including adolescents and young adults. Previous research has shown that sleep problems are highly prevalent among adolescents (Johnson et al., 2006; Kaneita et al., 2006) and young adults (Amaral et al., 2018), including working university students (Amaral et al., 2013). Sleep problems may affect mental health conditions, influencing the quality of life of working university students. Despite its high prevalence, sleep

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disturbance is frequently overlooked and undertreated (Bragg et al., 2019; Grandner & Chakravorty, 2017).

Work-related stress and sleep disturbances often create a cyclical pattern, in which high stress levels negatively impact sleep, and poor sleep quality exacerbates stress levels (Adeniyi et al., 2023). This cycle can ultimately lead to a decline in perceived quality of life, causing difficulty in enjoying leisure activities, maintaining social relationships, and coping effectively with everyday challenges (Naguib et al., 2023). Quality of life is defined as the extent to which individuals enjoy happy and good lives by achieving good balance in daily activities as well as intrapersonal and interpersonal relationships through creating and sustaining adequate conditions and capabilities (Pieper, Karvonen, & Vaarama, 2019).

### *Literature Review*

The prevalence of stress among students, around the globe is categorized as high, with research conducted on Australian university students revealing that 53% of students experienced psychological distress (Stallman, 2008). Another research on university students in Türkiye found that 27% of students suffered from stress (Bayram & Bilgel, 2008). Similar findings have been reported in Canadian (Adlaf et al., 2001) and Malaysian university students (Sidik et al., 2003). Asian countries have reported alarming figures regarding the prevalence of stress and other psychological disorders. Research conducted in India, involving medical students showed that over half of medical university students reported stress (Iqbal, Gupta & Venkatarao, 2015). A survey in Pakistan revealed that 71.67% of students experienced moderate to high levels of stress during their time at university (Sohail, 2013).

Work-related stress, combined with academic pressure, can harm working students' health and performance, including causing sleep disturbances and poor quality of life (Newberry & Allsop, 2017; Skaalvik & Skaalvik, 2015). Students may experience difficulty in juggling between workload and study. Youssef & Luthans (2007) explained that the inability to cope with the challenges of professional and academic life could have significant effects on student's mental health and well-being. Among the working population, academic work is commonly recognized as a source of stress (Panatik, O'Driscoll, & Anderson, 2011). Work stress affects both men and women (Peeters, Montgomery, Bakker, & Schaufeli, 2005), and it especially impacts individuals from lower socioeconomic backgrounds (Fan, Lam, & Moen, 2019).

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Empirical studies revealed a strong connection between perceived stress and sleep disturbances among the general population (Akerstedt, Lekander, Petersén, Kecklund, & Axelsson, 2014; Kashani, Eliasson, & Vernalis, 2012; Theadom & Cropley, 2008). Sleep is a primary human need and is crucial to both physical and mental health. The main cause of sleep disturbances in students is perceived stress due to academic and work pressures and research showed that sleep disturbances are common among working students, with very few studies discussing graduate students with part-time or full-time employment (Peltz, Bodenlos, Kingery & Rogge, 2021). Another study showed that poor sleep quality is significantly associated with high levels of stress (Alotaibi, Alosaimi, Alajlan, & Abdulrahman, 2020). Studies also revealed that the majority of graduates work either part-time or full-time while studying at university, with them suggesting that increased work hours appear to negatively influence students' sleep quality and mental health (Lederer, Autry, Day & Oswalt, 2015; Logan, Hughes & Logan, 2016). In other studies, university students reported elevated stress levels as a result of academic pressures (Misra & Castillo, 2004; Zajacova, Lynch & Espenshade, 2005).

The growing trend of students working part-time while pursuing their degrees is noteworthy. The combination of academic pursuits and employment among university students has become more frequent in the context of higher education in Pakistan (Ramzan, Javaid & Fatima, 2023). This dual commitment exposes students to the potential decline of their overall well-being. The numerous obstacles such as academic pressures, work responsibilities, political unrest, and economic instability, have led to a growing concern for the overall well-being of students in Pakistan (Hussain Mirza & Kumar, 2023). However, the specific dynamics of work-related stress, as well as its impact on sleep patterns and overall quality of life among working university students in Pakistan, are still largely unexplored. The present study aimed to fill the gap by examining the complex relationship between work stress, sleep disturbances, and quality of life among working university students in Pakistan. The sociocultural aspects of Pakistani higher education, combined with the changing demands of global employment, establish a unique array of stressors for Pakistani students.

### ***Research Gap And Novelty***

The review of existing literature reveals certain limitations, particularly in the methodological approaches used across various studies. For instance, Newberry & Allsop (2017) and Skaalvik & Skaalvik (2015) highlighted a methodological shortfall in *Work Stress, Sleep Disturbances, And Quality Of Life In Working University Students*  
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studies on this topic. Although [Youssef & Luthans' \(2007\)](#) work emphasized the mental health effects of academic and work pressures, it lacked a comprehensive examination of coping mechanisms, signifying another methodological gap. Similarly, studies conducted by [Panatik, O'Driscoll, & Anderson \(2011\)](#), [Stallman \(2008\)](#), and [Bayram & Bilgel \(2008\)](#) touched upon the prevalence of global stress but failed to consider diverse sample characteristics, leading to limitations in broader applicability. [Peltz, Bodenlos, Kingery, & Rogge \(2021\)](#) acknowledged the impact of sleep disturbances but fell short of providing nuanced demographic analysis, thereby highlighting a gap in exploring individual variations. Notably, the literature review underscores the absence of comprehensive studies that investigate the interplay among three key variables, i.e., work-related stress, sleep disturbances, and quality of life, specifically concerning working university students.

Past studies extensively examined the correlation between quality of life and work-related stress, encompassing various professions, such as teachers ([Yang et al., 2009](#)), nurses ([Babapour, Gahassab-Mozaffari, & Fathnezhad-Kazemi, 2022](#)), doctors ([Wu et al., 2010](#)), students ([Ribeiro et al., 2018](#)), and public officers ([Pradhan, 2021](#)). These studies were conducted in numerous countries, including Pakistan ([Makabe et al., 2018](#); [Malik, Björkqvist, & Österman, 2017](#); [Mazhar & Rohail, 2020](#)), to augment the understanding of potential connections between quality of life and work stress. However, limited research exists on students who work and study simultaneously. This gap in literature neglects to address the cumulative impact of work-related perceived stress, resulting in sleep disturbances and quality of life on students' well-being.

### ***Rationale Of The Study***

The rationale for studying the relationship between work-related perceived stress, sleep disturbances, and quality of life among working university students is based on findings that university students often juggle multiple responsibilities, including academic coursework and part-time or full-time employment ([Youssef & Luthans, 2007](#)). This can lead to a high level of stress, which may have adverse effects on the overall well-being of students ([Shankar & Park, 2016](#)). It is crucial to investigate the relationship between perceived stress at work, sleep issues, and quality of life among working university students in Pakistan because it can provide insights into the potential negative impacts of employment on students' well-being and help identify strategies to manage stress and improve overall quality of life. This information can be useful for employers,

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university administrators, and healthcare professionals in supporting working university students. By understanding factors that contribute to stress, sleep disturbances, and poor quality of life, interventions can be developed to help students manage their workload and maintain a healthy work-life balance.

### *Purposes/Hypothesis of the Study*

Based on the previous studies, researchers proposed the following hypotheses: 1) work-related perceived stress (WRPS) is significantly associated with sleep disturbances (SD) and quality of life (QOL) among working university students; 2) sleep disturbances (SD) is a moderator in the relationship between work-related perceived stress (WRPS) and quality of life (QOL); 3) there are mean differences based on the demographic data

## **METHODS**

### *Research Design*

A cross-sectional correlation research approach was employed to investigate the relationship between the study variables.

### *Research Sample And Sampling Technique*

Participants of this study were working university students from across Pakistan. A non-random purposive sampling technique was employed to recruit research participants. Researchers distributed an online survey via Google Form and the potential samples were screened based on study inclusion criteria (Table 1). A total of 461 students filled out the survey but only 287 students (72 men and 215 women) aged between 15 to 43 years ( $M = 24.34$ ,  $SD = 4.9$ ) successfully completed the survey. The remaining 174 students were excluded as they did not meet the study's inclusion criteria. Informed consent was obtained from participants before participating in the study.

Table 1.

Participants Recruitment Criteria

Inclusion Criteria	Exclusion Criteria
University students who work part-time or full-time in any company, institute, or organization	Students who run their own businesses, sharing partnership in any business, freelancers, family-owned business
Students (BS, MS/M.Phil/Ph.D., et cetera) attending morning and evening classes	Students pursuing an online degree (AIOU, VU, foreign online degree), diploma, or courses

Inclusion Criteria	Exclusion Criteria
Students from public and private universities	

Table 2.

Demographic Variables Of Research Participants

Variables	Sub-variables	f	Percentage (%)
Gender	Female	215	74.9
	Male	72	25.1
Family System	Nuclear	194	67.6
	Joint	93	32.4
Education Level	Bachelor	138	48.1
	Master	138	48.1
	Doctorate	11	3.8
Marital Status	Single	239	83.3
	Married	48	16.7
Degree Program	Morning	145	50.5
	Evening	20	7.0
	Weekend	122	42.5
Employment Status	Part-time	176	61.3
	Full-time	111	38.7
Sleeping Hours	4-6 hours a day	127	44.3
	7-9 hours a day	141	49.1
	Over 9 hours a day	19	6.6
Working Hours	5-7 hours a day	168	58.5
	8-10 hours a day	88	30.7
	Over 10 hours a day	31	10.8

### Demographic Profile Sheet

Relevant demographic information was included in the survey form, such as age, gender, marital status, family structure, number of family members, number of earners, education level (BS, MS, PhD, others), degree program (morning/evening program), employment status (part-time/full-time), working hours, sleeping hours, et cetera. These variables were collected to gather a comprehensive understanding of the participants' backgrounds and circumstances.

### The Perceived Stress Scale (PSS)

Sheldon Cohen and his colleagues developed the Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983). Participants use a Likert scale, typically ranging from 0 (never) to 4 (very often), to assess several elements in the scale. They are asked



about the frequency of specific emotions or thoughts in their daily lives. Higher scores on the scale indicate higher perceived stress levels.

The overall PSS score is calculated by summing up the responses to all the items. The PSS has been widely used in various clinical and research settings to measure stress levels and explore the potential effects on different aspects of mental and physical health. On the PSS, a person's score can range from 0 to 40. In this study, the alpha reliability coefficient for the PSS is  $\alpha=0.80$  (Spearman-Brown's coefficient=0.76, Guttman's split-half coefficient=0.76), indicating good internal consistency of the scale. Lee, Rauktis & Fusco, 2022 has confirmed the validity of PSS 10 by reviewing its psychometric evaluation (criterion and factorial validity) around the world (Lee, Rauktis & Fusco, 2022). Building upon established evidence, the content validity of the PSS has been systematically ensured for this study.

#### ***PROMIS Sleep Disturbance Short Form***

The PROMIS Sleep Disturbance Short Form is a self-report questionnaire designed to assess an individual's experience with sleep-related problems over the past seven days (Yu et al., 2012). It is part of the broader PROMIS Sleep Disturbance item bank, which includes a comprehensive set of questions about sleep quality and disturbances (Yu et al., 2012). The short form comprises eight items that cover various sleep-related aspects, such as sleep quality, sleep duration, sleep maintenance (staying asleep), and issues like trouble falling back to sleep after waking up in the middle of the night. Participants are asked to rate their sleep experiences over the past week on a scale from "1" (Not at all) to "5" (Very much). Higher scores on the scale indicate more significant sleep disturbances.

In this study, the PROMIS Sleep Disturbance Short Form exhibited robust internal consistency, as confirmed by a high alpha reliability coefficient ( $\alpha=0.88$ ) and a Guttman's split-half coefficient of 0.88. Considering the well-established psychometric properties of the original PROMIS Sleep Disturbance scale (Full, Malhotra, Crist, Moran & Kerr, 2019; Savage, Orth, Jacome, Bennett & Blanchard, 2021), researchers have ensured the content validity and face validity (Roy, Sukumar, Philip & Gopalakrishna, 2023) of the PROMIS Sleep Disturbance Short Form to assess sleep disturbance among working university students. This evaluation provides substantial evidence supporting the adequacy of the instrument in measuring sleep disturbances among participants.

#### ***The Quality of Life Scale (QOLS-16)***

The Quality of Life Scale (QOLS-16) is a self-report instrument designed to evaluate an individual's overall quality of life. It consists of sixteen items that cover various aspects of life, including physical health, psychological well-being, social interactions, and environmental issues (Burckhardt & Anderson, 2003). Respondents rate each question on a 7-point Likert scale, indicating their level of agreement with the provided statement. The scale aims to capture both objective and subjective dimensions of a person's well-being, considering factors that contribute to overall life satisfaction and happiness. It has been extensively used in research and therapeutic contexts to understand and assess the impact of interventions or life changes on individuals' quality of life. The total score ranges from 16 to 112, with a higher score indicating a higher quality of life.

In this study, the QOLS-16 demonstrated high internal consistency ( $\alpha=0.92$ , Spearman-Brown's coefficient=0.89, Guttman's split-half coefficient=0.89), indicating that it is a reliable tool for assessing overall quality of life.

#### *Data Collection Technique*

To collect data, the instruments were compiled into a comprehensive form and transcribed into Google Forms. Researchers generated an active link to be shared with the prospective sample. Social media platforms, such as WhatsApp, Facebook groups, Instagram DMs, emails, and personal and professional contacts, were used to reach out to potential participants. The link included a formal consent form, and individuals who accepted to participate and met the inclusion criteria were included in this study. The study protocols clearly outlined the aims and objectives of the research, as well as the participants' rights during the study. The research protocols involved the use of three scale measures, and it took approximately 10 minutes for participants to complete them. Ethical considerations were carefully followed to ensure the well-being and privacy of the participants, and they were thanked and appreciated for their participation.

## **RESULTS AND DISCUSSION**

### *Zero Order Correlation Analysis Between Study Variables*

It was hypothesized that work-related perceived stress (WRPS) would significantly be associated with sleep disturbances (SD) and quality of life (QOL) among working university students. Table 3 shows that working university student's work-related perceived stress is positively correlated with sleep disturbance ( $r=0.397$ ,  $p<0.01$ ) and

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negatively correlated with quality of life ( $r=-0.193$ ,  $p<0.01$ ). It further shows that sleep disturbance is not statistically significant with quality of life.

Table 3.

Pearson Product Moment Correlation Between Study Variables

	Perceived Stress	Sleep Disturbance	Quality of Life
PSS	-	.397**	-.193**
SD		-	.477
QOL			-

Note. \*\*correlation is significant at the 0.01 level (2-tailed).  $N= 287$ ; PSS=perceived stress scale; SD=sleep disturbances; QOL=quality of life

### Multiple Linear Regression Analysis

The second hypothesis of this study proposed that sleep disturbances (SD) act as a moderator in the relationship between work-related perceived stress (WRPS) and quality of life (QOL). To test this hypothesis, a multiple linear regression (MLR) analysis was performed. The results of the MLR analysis confirmed that both SD ( $\beta=0.406$ ,  $t=7.645$ ,  $p=0.000$ ) and QOL ( $\beta=-0.210$ ,  $t=-3.958$ ,  $p=0.000$ ) are significant predictors of WRPS (Table 4). The overall regression model was found to be significant ( $F=35.84$ ,  $p<0.01$ ). This indicates that the combination of predictors, SD and QOL, together has a significant impact on explaining the variance in WRPS.

Table 4.

Multiple Linear Regression Analysis On WRPS Considering SD And QOL As Predictors

	B	$\beta$	T	p	95% CI
SD	0.264	0.406	7.645	0.000	[0.196, 0.332]
QOL	-0.066	-0.210	-3.958	0.000	[-0.099, -0.033]

Note:  $R^2= 0.20$  CI= confidence interval for B; SD=sleep disturbances; QOL=quality of life

### Moderation Analysis Using PROCESS Macros And AMOS

In this study, sleep disturbance (SD) was explored as a moderator variable, which serves to influence the relationship between work-related perceived stress (WRPS) and quality of life (QOL). The significance of this moderation effect is examined using a structural equation model (SEM), and the results are presented in Table 5. The findings from the SEM analysis indicate that sleep disturbance acts as a significant moderator ( $p<0.01$ ) with an estimated value of 0.52 ( $SE=0.11$ ,  $t=4.64$ ). Additionally, the interaction

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variable (SD\_QOL) is also found to be statistically significant ( $p < 0.01$ ) within the model ( $SE = 0.03, t = -2.59$ ). Moderation analysis was conducted using AMOS, and the results are presented in Figure 1. These results contribute to a deeper understanding of the interplay between sleep disturbance, work-related perceived stress, and quality of life among the participants in the study (Table 5).

Table 5.

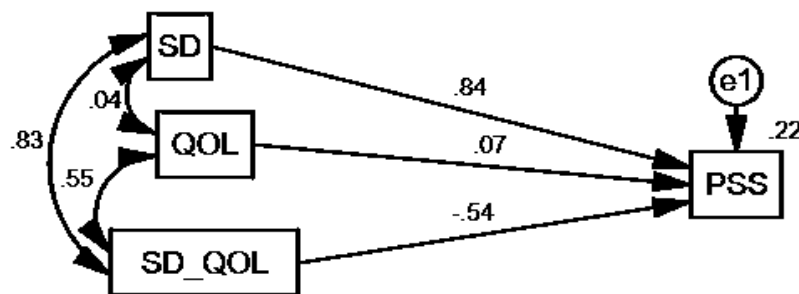
Moderation Analysis

Moderation Model Coefficients					
	Estimates	SE	t	p	95% CI
SD	0.52	0.11	4.64	0.00	[-0.08, 0.17]
QOL	0.05	0.06	0.71	0.48	[0.30, 0.74]
SD_QOL	-0.07	0.03	-2.59	0.01	[-0.12, -0.02]

Note: SD=sleep disturbances; QOL=quality of life; SD\_QOL=SD interaction with QOL (SD\*QOL); SE=standard error

Figure 1.

Structural Equation Modeling using AMOS



### Analysis Of Mean Differences

The third hypothesis of this study was that there would be mean differences in WRPS, SD, and QOL based on demographics. To test this hypothesis, comparisons of means using independent sample t-test and analysis of variance (ANOVA) were conducted. Table 6 shows the results. Work-related perceived stress (WRPS) is significantly related to gender ( $p < 0.05$ ). Further analysis of mean differences indicated that women scored higher ( $M = 20.48, SD = 5.8$ ) than men ( $M = 18.90, SD = 5.4$ ).

ANOVA test on sleeping hours indicated a significant result ( $p < 0.05$ ) for the SD variable, and the mean difference showed that students who sleep 4-6 hours a day have a higher mean value and variance ( $M = 26.54, SD = 9.2$ ). The ANOVA test on working hours also indicated a significant value ( $p < 0.05$ ). The mean difference showed that

students who work more than 10 hours per day experience more sleep disturbance ( $M=26.16$ ,  $SD=8.4$ ).

Regarding the QOL level based on demographics, educational level ( $p<0.05$ ), marital status ( $p<0.05$ ), degree program ( $p<0.05$ ), and employment status ( $p<0.05$ ) were found to be significant variables. The mean differences based on educational levels showed that bachelor students reported better QOL ( $M=73.0$ ,  $SD=18.3$ ) while doctorate students reported lower QOL ( $M=61.64$ ,  $SD=18.9$ ). Based on the degree program, students enrolled in the weekend program have better QOL ( $M=69.52$ ,  $SD=16.7$ ) than those in the evening program ( $M=60.80$ ,  $SD=19.0$ ) and morning program ( $M=62.79$ ,  $SD=19.0$ ).

The independent sample t-test on marital status resulted in a significant value ( $p<0.05$ ), as did the test on employment status ( $p<0.05$ ). The mean differences showed that married students reported a better QOL ( $M=70.94$ ,  $SD=17.1$ ) than singles ( $M=64.42$ ,  $SD=18.4$ ). For employment status, it was found that students who work full-time had better QOL ( $M=68.66$ ,  $SD=17.6$ ) than those who worked part-time ( $M=63.53$ ,  $SD=18.5$ ).

Table 6.

Differences in Perceived Stress, Sleep Disturbance, and Quality of Life Based on Demographics

Demographics	WRPS		SD		QOL	
Gender	t=2.01	p=0.04	t=0.42	p=0.66	t=-0.23	p=0.81
Family System	t=1.19	p=0.23	t=0.92	p=0.35	t=-0.93	p=0.35
Educational Level	F=2.30	p=0.10	t=0.16	p=0.85	t=6.39	p=0.00
Marital Status	t=1.20	p=0.22	t=-0.44	p=0.65	t=-2.25	p=0.02
Degree Program	F=2.14	p=0.11	F=0.95	p=0.38	F=5.31	p=0.00
Work Nature	t=0.15	p=0.87	t=-0.61	p=0.53	t=-2.32	p=0.02
Sleeping Hours	F=0.78	p=0.45	F=14.27	p=0.00	F=2.66	p=0.07
Working Hours	F=0.00	p=0.99	F=4.05	p=0.01	F=0.69	p=0.50

### Discussion

Work-related stress consistently manifests in both physical and psychological strains, leading to reduced sleep, as confirmed by [Eskildsen, Andersen, Pedersen, Vandborg, & Andersen \(2015\)](#) and supported by the first hypothesis of this research. This suggests that managing work responsibilities alongside academic commitments can elevate stress levels, disrupt sleep patterns, and adversely affect the quality of life of students. Statistical analysis has verified a significant correlation between perceived

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work-related stress, sleep disturbance, and a subsequent negative correlation with the quality of life. The study findings by [Ayyıldız & Kalafat \(2022\)](#) support this notion, revealing a positive correlation between perceived stress and sleep issues.

Sleep reactivity, defined as the degree to which stress affects sleep, particularly in falling and staying asleep, varies among individuals. [Kalmbach, Anderson, & Drake \(2018\)](#) noted that those with high sleep reactivity experience more significant sleep disruptions during stressful periods of their lives, while individuals with low sleep reactivity remain relatively unaffected by stress. An experiment by [Drake, Richardson, Roehrs, Scofield, & Roth \(2004\)](#) also confirmed these findings, demonstrating a link between elevated perceived stress levels and sleep problems in terms of subjective perception of stress ([Sadeh, Keinan & Daon, 2004](#)). Their research revealed a strong negative correlation between sleep and stress. They discovered that improvements in perceived stress could mediate cognitive impairments, and this relationship might be further influenced by enhancements in sleep quality.

Furthermore, data analysis suggests a lack of a statistically significant relationship between sleep disturbance and quality of life, which contradicts the findings of [Yoshimura et al. \(2009\)](#). In their study of 2,271 individuals, it was confirmed that sleep adequacy significantly impacted quality of life by influencing sleep conditions that independently affected an individual's overall quality of life. A systematic review by [Ribeiro et al. \(2018\)](#) highlighted a negative association between quality of life and stress. This review emphasized factors like insomnia and burnout as contributors to the decline in quality of life. The comprehensive nature of this review connected these factors directly to the deterioration of overall quality of life.

The second hypothesis investigated how sleep disturbances moderate the relationship between work-related perceived stress and quality of life among working university students. The analysis, conducted using multiple linear regression, revealed that both sleep disturbances and quality of life predict work-related perceived stress. This aligns with findings from a systematic review by [Ribeiro et al. \(2018\)](#), which highlighted the negative association between quality of life and stress, particularly factors like insomnia and burnout among university students. Notably, sleep disturbances can potentially moderate the link between work stress and sleep quality, with individuals experiencing higher levels of sleep disturbance being more susceptible to the adverse effects of work stress. Studies also indicate that work-related stress often

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leads to sleep disturbances such as difficulty falling and staying asleep, non-restorative sleep, and fatigue (Belmon, van Stralen, Busch, Harmsen & Chinapaw, 2019). Additionally, task overload and perceptions of work as hectic or exhausting are linked to sleep difficulties, affecting sleep initiation and maintenance (Schlarb, Reis & Schröder, 2012). Inadequate, or poor sleep quality can escalate stress levels in the workplace, impacting cognitive function, emotional regulation, and resilience to workplace stressors (Akerstedt, Lekander, Petersén, Kecklund & Axelsson, 2014). Work-related stress not only affects the health of workers but also incurs significant costs for companies and countries, profoundly impacting productivity as found by La Torre et al. (2018).

Sleep is a vital restorative process, impacting both physical and mental well-being. Disrupted sleep limits the body and mind's recovery time, making individuals more vulnerable to the adverse effects of stressors (Kalmbach, Anderson & Drake, 2018). Sleep disturbances have been associated with cognitive impairments, emotional instability, and physical health issues, thereby affecting overall quality of life (Grandner, 2019). The present study investigated how sleep disturbance influences the relationship between work-related perceived stress and quality of life. Statistical analysis revealed that sleep disturbance significantly moderates the connection between quality of life and work-related stress. Individuals with high levels of work-related stress coupled with chronic sleep problems reported a lower quality of life compared to those experiencing either stress or sleep issues alone (Ilies et al., 2017).

The third hypothesis explored the mean differences in study variables based on demographic data. The results indicated a significant association between work-related perceived stress and gender. Various studies have delved into gender-based differences in workplace stress levels, linking stress and workplace dynamics to disrupted sleep. Research suggests that gender, particularly in conjunction with age, may influence these dynamics, with the inability to disconnect from work during free time being a potential link between stress and sleep (Åkerstedt et al., 2002). The findings align with previous studies, indicating that women tend to report higher levels of perceived stress compared to men in different work environments (Graves, Hall, Dias-Karch, Haischer & Apter, 2021; Ganster & Rosen, 2013). The disparities in stress responses are attributed to factors such as coping mechanisms, societal expectations, and work-related roles. However, inconsistencies in findings highlight the complexity of the relationship between gender

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and work-related stress, underscoring the necessity for further investigation of this intricate interplay (Batz-Barbarich, 2016).

A significant relationship was found in the examination of sleeping hours, working hours, and sleep disturbances among university students. It emphasizes the crucial role of sleep in the physical and mental well-being of individuals, particularly students facing academic and job challenges. The research highlights that the number of sleeping hours significantly impacts sleep disturbances among students managing both work and academics. This situation can lead to sleep deprivation, irregular sleep patterns, and heightened stress levels. The findings align with previous studies, emphasizing the importance of promoting healthy sleep habits and optimizing working hours for university students to improve their overall well-being and academic performance (Åhrberg, Landstad, Bergroth, & Ekholm, 2010). Moreover, the text underscores how high levels of work stress can contribute to increased physiological arousal, making it challenging for individuals to relax and fall asleep. Sleep disturbances, in turn, can lead to impaired cognitive function, emotional regulation, and heightened sensitivity to stress, potentially worsening the impact of work-related stress on students.

Numerous studies underline the vital role of sufficient sleep in the well-being of university students facing academic and social pressures (Hassard, Teoh, Visockaite, Dewe, & Cox, 2018). Concerns arise due to the increasing prevalence of part-time employment among students and its potential impact on their sleep patterns. Previous research consistently links longer working hours with increased sleep disturbances, including difficulties in falling asleep, shorter sleep duration, and poorer sleep quality (Graves, Hall, Dias-Karch, Haischer, & Apter, 2021). These disturbances are associated with negative consequences such as impaired academic performance, reduced productivity during the day, and compromised overall health (Malik et al., 2020; Heidari et al., 2022). Hence, policymakers, university administrators, and employers must recognize the significance of addressing the working hours of university students who are employed. By acknowledging and addressing these patterns, stakeholders can promote healthier sleep habits and improve the overall well-being of university students.

Quality of life analysis based on demographics established the significance of educational level, marital status, degree program, and employment status as crucial determinants (Graves et al., 2021). Educational attainment strongly influences overall

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quality of life, as higher education often correlates with better job prospects, higher income, and improved access to healthcare, which eventually contribute to enhanced well-being (Walker et al., 2017). Marital status plays a pivotal role in individuals' well-being, with married individuals having higher levels of social support and emotional stability, leading to increased life satisfaction (Wahyuningsih, Kusumaningrum & Novitasari, 2020). Degree programs and academic specialization influence the quality of life, with fields offering higher demand and growth potential linked with greater job satisfaction and financial security (Kaplan et al., 2010). Additionally, occupation significantly impacts life satisfaction, with individuals in fulfilling professions reporting higher job satisfaction (Pascoe, Hetrick, & Parker, 2020). Chronic sleep issues affect various aspects of life, including social and academic performance, difficulties in maintaining focus, and psychological and physical health concerns. Sleep disturbance correlates with increased fatigue, reduced attentiveness, and job satisfaction (Schlarb, Reis, & Schröder, 2012). Coping strategies and problem-solving abilities may contribute to differences in health and sleep quality.

## CONCLUSIONS AND SUGGESTIONS

### *Conclusions*

The pressure of balancing work responsibilities with academic commitments is a challenge faced by many university students, and this study aimed to shed light on the relationship between work-related perceived stress, sleep disturbances, and the quality of life among employed university students in Pakistan. The results of this research offer valuable perspectives on the intricate association among these variables and their potential outcomes for the well-being of students. This study confirmed that work-related perceived stress is significantly correlated with sleep disturbances, highlighting the impact that work-related pressures can have on students' sleep patterns. Additionally, there is a negative correlation between work-related perceived stress and the quality of life, underlining the adverse consequences of heightened stress levels on students' overall well-being.

Furthermore, the analysis revealed that sleep disturbances are not only an outcome of work-related stress but also play a significant moderating role in the relationship between work-related perceived stress and quality of life. This underscores the importance of addressing sleep issues when aiming to enhance the quality of life for

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working university students. In light of these findings, it is evident that working university students face a challenge in balancing work commitments and academic responsibilities, which can lead to increased stress, disrupted sleep, and decreased quality of life. To better support these students, a multifaceted approach is necessary.

### **Suggestions**

There is a limitation in establishing a causal relationship between variables examined in this study due to its cross-sectional design. Differences in experiences of job stress and sleep disturbance across demographics may be influenced by societal, cultural, and psychological factors, warranting a longitudinal or experimental study design to establish causality. Challenges in data collection using Google Forms affected sample representation, potentially skewing results. Social desirability bias in reporting stress and quality of life, alongside self-selection bias among participants, might also affect accuracy and representativeness.

To overcome these limitations, future research can employ a longitudinal research design, the random sampling method, and diverse data collection techniques. Controlling for confounding variables and including comparison groups can enhance validity and offer insights into employment and education's impact on stress and quality of life. The study's findings highlight the importance of managing work-related stress and promoting better sleep for students' well-being, implicating the role of universities, employers, policymakers, and support services in tackling this problem. This study encourages further research into the complex relationship between work-related stress, sleep, and quality of life among students, aiming for targeted interventions and support programs. Acknowledging the long-term effects of stress and sleep disturbances during university years, proactive measures can promote resilience, stress management, and healthy sleep habits among students, potentially influencing their future health outcomes.

### **CONFLICT OF INTEREST**

The author(s) of this article declare no conflict of interest.

### **DISCLOSURE STATEMENT**

The author(s) did not receive any financial support during the preparation of the current study.

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**Haleema Khatoon:** Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Project Administration; Resources; Validation; Visualization; Writing Original Draft; Writing, Review & Editing.

**Abeeha Arshad:** Conceptualization; Data Curation; Investigation; Project Administration; Resources; Writing Original Draft.

**Muhammad Luqman Khan:** Conceptualization; Data Curation; Project Administration; Supervision Role.

**Amna Noor:** Conceptualization; Investigation; Project Administration; Writing Original Draft.

**Farwa Mustafa:** Conceptualization; Data Curation; Project Administration.

**Arhamna Tahir:** Conceptualization; Investigation; Project Administration.

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