Perceived Stress, Poor Sleep Quality, and Mental Well-being in Young Adults

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ARTICLE INFO	ABSTRACT
	This study intended to identify the correlation between perceived stress (PS), Poor sleep quality (PSQ), and mental health. The hypothesis indicated that there could be a link between PS, PSQ, and mental well-being in young people. A sample of 488 young adults aged between 19 and 25 years (M = 20.38 and SD = 1.76), men (n = 244) and women (n = 244), was obtained from different private and government sector universities. Convenience sampling strategy: Participants were approached and data was collected. PS, PSQ, and mental well-being were assessed using the Pittsburgh Sleep Quality Index, PS Scale, and Warwick. The Edinburgh Mental Well-Being Scale. Pearson product-moment correlation and moderation analysis using AMOS were used to test the hypotheses. Additional finding t-tests were used for independent samples. The study found that PS was positively connected with PSQ but unfavourably linked with mental well-being. Further research revealed substantial differences in young adults' feelings of stress, poor sleep, and mental health based on gender, university, and family structure.

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1.   Introduction

College students who practice mindfulness report feeling less burned out, although it is unclear how mindfulness mediates this association. This study examined this connection and investigated the potential mediating properties of 536 Chinese college students were surveyed on their felt stress and sleep quality. The findings revealed a negative link between mindfulness and burnout, with PS and sleep quality serving as moderating element(Gan, Xue, & Chen, 2023). A systematic research was undertaken at the Combined Military Hospital, Lahore Medical College, and the Institute of Dentistry in Lahore, Pakistan, to determine the incidence of stress and sleep problems among medical students. In all years, students pursuing Bachelor of Medicine and Bachelor of Surgery (MBBS) degrees were included in the research. The research used four questionnaire elements: The study found that medical students had exceptionally high levels of academic stress and PSQ. The results emphasize the significance of attending to medical students' mental health needs and implementing suitable interventions to enhance their well-being (Waqas, Khan, Sharif, Khalid, & Ali, 2015). A correlation research was conducted to examine the association between PS, good mental health, and academic achievement among university students in Rawalpindi and Islamabad, Pakistan.

2.   Literature Review

A study involving 1279 Italian university students investigated the frequency of insomnia, PSQ, and their links to stress. Among the anonymous surveys that participants completed were the Short Form-12 Health Survey, PS Scale, Pittsburgh Sleep Quality Index, and Insomnia Severity Index. The findings revealed that 65% of the participants had poor sleep, and 55% had symptoms of insomnia. Low physical and mental health ratings and greater PS levels were observed in students with PSQ and insomnia. After controlling for PS and health-related

variables, hierarchical regression models showed that the components of sleep quality significantly predicted both mental and physical wellness. This study highlights the need for interventions to boost university students' emotional and physical well-being and improve sleep quality (Carpi, Cianfarani, & Vestri, 2022; Majid, Rasool, Rasool, & Zafar, 2023). According to indigenous research, in COVID-19 patients, PSQ can also have negative consequences for one's health and well-being. The study's goal was to measure the quality of sleep in Pakistani persons who were not proven COVID-19 patients but were carriers of the virus. An online cross-sectional survey was conducted in Pakistan's Punjab province from April to September 2020. Data were collected on demographics, COVID-19 illness status, prior awareness of COVID-19, and sleep quality as defined by the Pittsburgh Sleep Quality Index (PSQI). This study had 597 people in total, 296 (49.6%) of whom were COVID-19 patients and 301 (50.4%) of whom were not COVID-19 patients. Seven different apparatuses of sleep were measured using the PQSI: subjective quality, latency, duration, efficiency, disruptions, medicine, and dysfunction throughout the day. In cases where the mean ± standard deviation (SD) was 1.47 ± 1.032, 0.97 ± 1.006, 0.61 ± 0.995, 1.13 ± 0.649, and 0.96 ± 0.743 (Malik et al., 2022; Waqar, Majid, Zafar, & Aziz, 2023).

This Pakistani research investigates the connection between PSQ and mental health issues among Pakistani people, as well as the variables that contribute to these relationships, and offers a resource for the management and prevention of psychological illness across a range of demographics. The random cluster sampling technique was used in this study. Both the Pakistani mental illness calculation scale and The Pakistani Sleep Disorder Scale was used (Waqar et al., 2023). Data was analyzed with regression, correlation, independent sample t-tests, and SPSS 18.0. Urban and rural populations show considerable discrepancies ($p < 0.05$ or 0.01). There was no significant difference in mental health indicators between urban and rural areas ($p>0.05$). In Pakistanis, there was a significant positive connection ($p < 0.01$, $r = 0.3390.541$) between mental disorders and sleep quality (Zafar & Majid, 2015). The Pakistani Sleep Disorders Scale assesses drowsiness, insomnia, and daily function (SD1 and SD2). The Pakistani mental illness prediction scale total score was analyzed using regression, which comprised the five components (SD3), exercise paradoxical sleep (SD4), and non-exercise paradoxical sleep (SD5). The findings revealed that 38.8% of the variance occurred in Pakistan. These elements can help explain Pakistani mental illness. in the quality of sleep and mental health issues among various groups, and there is a certain degree of predictive power associated with sleep quality (Mehmood et al., 2020).

To investigate the connection between special education students' resistance, PS, and mental discomfort during the COVID-19 epidemic (Majid & Zafar, 2018). The association between the research variables was examined using a cross-sectional correlation research methodology. Of the 250 special students in the sample, 100 (or 40%) were female (or 60%) male between the ages of 15 and 30. The data were gathered using a variety of research tools (such as the patient health questionnaire, PS scale, and final resilience scale) and the purposive sample approach. Multiple regression analyses and correlations were used to draw conclusions. An independent t-test was performed in Oder to investigate gender disparities. The findings showed that PS is positively connected with mental discomfort and adversely linked with resilience (Khalil, Khan, Batool, Khan, & Tariq, 2022). This study investigated the correlation between psychological well-being and perceived job stress among secondary school heads in Khyber Pakhtun Khawa. Using a multistage sampling approach, 402 secondary school heads (260 males and 142 females) were chosen as a sample. The study design employed was descriptive, quantitative, and correlative (Zafar & Majid, 2016). Two standardized instruments, the "Occupational Stress Index (OSI)" and "Ryff's Psychological Wellbeing Scale (RPWB)," were used to collect data from the participants. The OSI was used to measure perceived occupational stress, while the RPB was used to measure psychological well-being. Multiple regression (Rasool, Parveen, Majid, & Rasool; Suleman, Hussain, Shehzad, Syed, & Raja, 2018). Following were the objectives of the study:

- For determine the association between PS, sleep quality and mental well-being in young adults.
- To assess whether PSQ moderates the relationship between PS and mental well-being.

Considering the research aims, the following hypotheses have been developed:

- PS will have a significant association with sleep quality and psychological well-being among young adults.
- PS and PSQ will be predictors of mental well-being in young adults.
- Sleep quality will act as moderator between PS and mental well-being among young adults.

Figure 1: Hypothetical model shows role of PSQ in organization between PS and mental well-being
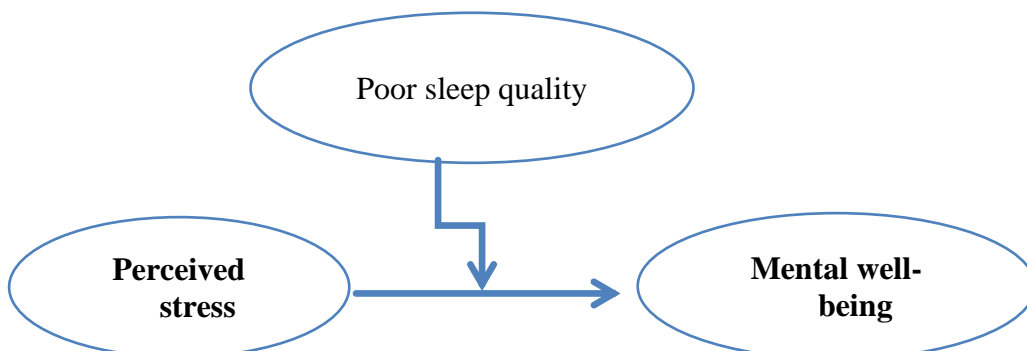
3. Method

Correlational research design was employed in the present study to find out the association between PS, sleep quality and mental wellbeing in young adults. The sample comprised of 488 young adults, including men (n = 244) and women (n = 244) ranging in age from 19 to 25 years (M = 20.38 and SD = 1.76) A convenience sampling method was used to gather data from public and private universities, according to the following criteria: Only those participants will take part in this study who are the University Students age range in 19 to 25 years old and Both men and women. The participant will be excluded from the study who are Suffering from severe physical or psychological illness.

Table 1: Descriptive data for demographic characteristics

Variables	f (%)	M(SD)
Age		20.38(1.76)
Gender		
Men	244(50)	
Women	244(50)	
Birth order		
Only child	145(29.7)	
First Born	146(29.9)	
Middle Born	122(25.0)	
Youngest	75(15.4)	
Family Income		83594.26(85480.11)
University Education		
First Year	179(36.7)	
Second Year	155(31.8)	
Third Year	68(13.9)	
Fourth Year	86(17.6)	
Grade Point Average		3.13(0.44)
Area of Residence		
Rural	74(15.2)	
Urban	414(84.8)	

Table 1 shows the distribution of the sample in terms of gender (50% male, 50% female). The table also showed the mean and standard deviation of all demographic variables such as age, gender (men and women), birth order (only child, first born, middle born and youngest), university education (in years), GPA, area of residence (rural and urban), employment status(full time employment, part time employment, self-employed and unemployed), family system(nuclear and joint), marital status(nuclear and joint), and university(public and private). The frequency and percentage of categorical variables were reported.

3.1. Perceived Stress scale

PS is defined as the perceived amount of stress that an individual is experiencing in life. It is the person's understanding or assessment of the expectations made of them and their

capacity to meet those demands. It is the impression of a person's degree of stress at a certain time or over a long period of time. It is operationally defined as sum of scores on PS Scale (PSS) (Komalasari, T 2019).

3.2. Sleep Quality

In an individual's level of satisfaction with every factor of their sleep experience is consider the level of sleep quality. Sleep efficiency, sleep latency, sleep duration, and waking after sleep start are the four individuality of good sleep (Majid, Rasool, Shahzad, Shakir, & Rasool). (Scott, 2021).

3.3. Mental Well-being

Mental well-being is an individual's overall subjective valuation of their mental state, which encompasses positive emotions, cognitive functioning, and social functioning. It includes positive feelings such as happiness, contentment, and life satisfaction, as well as the ability to cope with stress and adversity, and to form and continue positive relationships with others (Majid & Abidi, 2013; Majid et al., 2023).

3.4. Assessment Measures

Following were the assessment tools used in the present study:

- Demographic Sheet
- PS scale (PSS).
- Warwick-Edinburgh Mental Well-being Scale (WEMWBS).
- Pittsburgh Sleep Quality Index Addendum for PTSD (PSQI-A).

3.4.1. Demographic Sheet

Demographic information form included all the basic information of the participant i.e. age, gender, birth Oder, family system, semester, GPA (Grade point average), Area of residence, Employment status, education (in years), family system, marital status, university and presence of any physical illness.

3.4.2. Perceived Stress Scale

The PS Scale (PSS) is a frequently used psychological measure for measuring stress perception. It is a measure of how stressful a person considers their living circumstances to be. The questions were designed to gauge respondents' perceptions of their lives as unpredictable, chaotic, and overwhelming. According to the grading system, greater PSS scores indicate higher levels of perceived stress. Individual PSS scores vary from 0 to 40. Low stress is defined as a score of 0 to 13. Moderate stress would be defined as a score between 14 and 26. Moderate PS is defined as a score between 27 and 40. This scale is valid and reliable Students studying to become doctors and other health professionals can use the Italian translation of the PSS scale to measure their perceptions of stress. Stress has a significant negative influence on life quality and is linked to several harmful health outcomes (Malik et al., 2022). (Cohen et al,1983).

3.4.3. Pittsburgh Sleep Quality Index

The Pittsburgh Sleep Quality Index Addendum for PTSD (PSQI-A) is a self-analysis instrument that assesses the frequency of seven DNB. The scale's subcategories include subjective sleep quality, sleep latency, sleep length, sleep efficacy, sleep disruptions, usage of sleep medicine, and daytime dysfunction. Component 1 measures sleep quality (item 9), component 2 measures sleep latency (item 2 and item 5a), component 3 measures sleep duration (item 4), component 4 measures sleep efficiency (items 1, 3, and 4), component 5 measures sleep disturbances (items 5b-5j), component 6 assesses sleeping medication use (item 6), and component 7 measures daytime dysfunction (items 7 and 8). An example of a scale item is: "How would you rate your sleep over the last month?" An example of a scale item is: "How would you rate your sleep in the last month?" The score runs from 0 to 21, with a cut-off number of 5. The reliability and validity of this scale are satisfactory (Carpenter et al., 1998).

3.4.4. *Warwick Edinburgh Mental Well-Being Scale*

In 2008, the universities of Warwick and Edinburgh developed the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). It is a 14-point boosting scale used to assess a population's mental health. Each response is assigned a Likert scale score out of five. The scale's minimum

score is 14 and its maximum score is 70. Each item is graded using a 5-point Likert scale, where 1 represents "none of the time" and 5 represents "all of the time." This scale's score is calculated by averaging the scores for each of the 14 test items on a scale of 1 to 5 (1 = Never to 5 + Always). Each question carries the same weight. Scores have a minimum of 14 points and a maximum. Higher scores correspond to better mental health. This scale is trustworthy, and a single component model was supported by a positive feature analysis. Chronbach alpha reliability was found to be 0.90. High convergent validity was demonstrated by WEMWBS with the happiness scale and the relational humour scale. This scale is valid apply all over the world. An example item from scale is: "I have been feeling optimistic about future" (Tennant, 2007).

3.4.5. Procedure

The permission to use the questionnaires was taken from the authors through email. The researcher obtained an authority letter from the Department of Humanities. This letter was used to get permission from the universities selected for data collection. Data was composed from 5 different government and private universities. Heads of the Universities were approached to take permission. The purpose of the research was informed to the authorities. They gave their consent and were ready to manage their schedule according to the study requisites. The researcher reached the universities in time for the data collection. Only university students were selected. The young adults were approached through convenience sampling. A total number of 500 young adults were approached from their educational institutes for data collection. The researcher gave a brief introduction about her and explained the aim of the study to participants. It was informed to participants that all information will remain confidential. The voluntary participation of participants was assured by a researcher. Participants were told that they can withdraw at any time. A questionnaire was given to them and explained all the instructions. From each university data of 100 questionnaires was collected. The whole administration took 2 to 3 hours in each university. There were total 500 questionnaires that were distributed among the participants. As the data collection ended after multiple visits, the participants were warmly thanked for their cooperation. The response rate was 97%. 12 questionnaires were returned as more than half empty, so they were not included in the research. So, the responses of 488 participants were recorded. Finally, the researcher showed her humble gratitude to the authorities of university for their assistance and collaboration. After data collection, data were analyzed, and the results were discussed.

3.5. Ethical Considerations

Following were the ethical considerations for the study:

- The authors of assessment measures were contacted, and their permission was obtained.
- The concerned authorities were approached, and their permission was sought.
- The participants received assurances that the data they provided would be kept private and wouldn't be disclosed to anyone who wasn't directly involved in the research when they were asked to give their consent and informed of their right to leave the study at any time.
- The results were reported with accuracy.

4. Results

Data was investigated by using SPSS version 25. Descriptive statistics of mean and standard deviation were calculated for demographic and study variables. Coefficient alpha values were calculated to assess the inner consistencies of the scales. Initially correlation between variables was considered with Pearson Correlation. Next moderation was analyzed using AMOS software to assess sleep quality as a moderator between PS and mental well-being. Firstly, the researchers calculated the mean and standard deviation of demographics and study variables (Table 2). The alpha coefficients of study measures were also shown in Table 2.

Table 2: Descriptive Statistics of Study Variables

Study Variables	No. of Items	A	M	SD	Range
PS	10	.88	21.16	6.32	3-36
PSQ	19	.62	9.61	3.70	1-20
Mental Well-Being	14	.87	44.73	11.00	15-70

Range, Mean, Standard Deviation and Internal Consistency for all scales were calculated as shown in Table 2. Alpha coefficients for scales were calculated to assess the internal

consistency of scales. Table 2 showed that the alpha reliability of variables: PS and mental well-being were above 0.62. The alpha reliability of variable, named sleep quality was 0.62. The value of alpha coefficient for PS was 0.88, and for mental well-being was 0.87. The mean value of mental well-being was highest, 44.73, it indicates that overall mental well-being of young adults is good. It was hypothesized that there will have association between PS, sleep quality and mental well-being.

Table 3: Correlation of Demographics with Study Variables

	2	3	4	5	6
Age	-.05	-.56	-.03	-.03	.07
GPA	_	.11**	-.04	-.02	-.01
Family Income		_	.01	.00	-.00
PS			_	.10*	-.11**
PSQ				_	-.11*
Mental well-being					_

Note. *=p<.05, **=p<.01, ***p< .001

Table 3 PS had a substantial positive correlation with PSQ but a negative correlation with mental well-being. Furthermore, PSQ had a negative correlation with mental well-being. Hence, the theory was approved. It was hypothesized that PSQ will moderate the relationship between PS and mental well-being in young adults. Structural equation modeling (SEM) through AMOS was used to analyze this hypothesis.

Table 4: Model Fit Indices for PSQ, PS and Mental Well-Being

| Model	x^2	dF	p	CFI	IFI	RMSEA
Model 1	2.40	2	.30	.97	.98	.02

Table No 4: Note. N=488, All change in chi-square value is computed relative to the model, χ^2>.05. CFI= Comparative Fit Index; IFI= Incremental Fit Index; χ^2 = chi-square. RMSEA=Root Mean Square Error of Approximation. The above table indicates the outcomes of absolute fit for Model 1. The path model explains hypothesized links between the study variables i.e.: PS, PSQ, and Mental Well-Being. In the present model, PS was an exogenous variable, and PSQ and mental well-being were endogenous variables. All the exogenous and endogenous variables were incorporated in path analysis, to test the assumption across the model. Chi-square should be non-significant, RMSEA was <.001, RMSEA should be less than .08 or .05; CFI and IFI values were .97 and .98 indicating a perfect fit for the model. Direct and Indirect effect estimates were calculated to analyze the moderation model with the bootstrapping method (95% Confidence Intervals).

Table 5: Estimates of the Direct and Interaction Effect of PS, PSQ and Mental Well-Being

	Mental Well-Being				95%CI	
Effects	B	ß	SE	p	LL	UL
PS	-1.11*	-.10*	.49	.02	-.19	-.01
PSQ	-1.02*	-.09*	.49	.03	-.18	.00
Interaction	.96*	.09*	.45	.03	-.01	.18

Note. *p < .05; **.p< .01; ***.p< .001; ß = Standardized Regression Coefficient

Figure 2: Figurative Representation of Moderating Role of PSQ between PS and Mental Well-Being
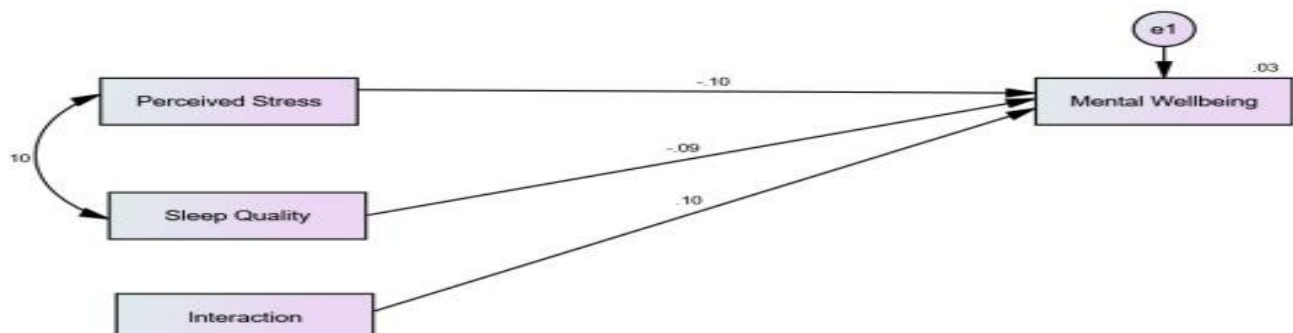
PS and PSQ were found to be unfavorable predictors of mental health in Table 8's findings. Furthermore, the interaction effect was substantial, demonstrating that the connection between PS and mental health was mitigated by PSQ. As a result, assumptions were accepted.

The moderation model indicates that PSQ moderates the association between PS and mental well-being. For additional findings, a series of Independent Sample *t*-Tests were employed to contrast demographic variables.

Table 6: Mean Differences between Joint and Nuclear Family System in PSQ, PS and Mental Well-Being

	Joint Family System (n= 121)		Nuclear Family System (n= 367)		*t(df)*	*p*
	M	*SD*	*M*	*SD*		
PS	21.33	6.48	21.10	6.27	.40 (485)	.73
PSQ	9.73	3.59	9.57	3.74	.40 (483)	.68
Mental well-being	43.24	11.09	45.22	10.94	-1.71(486)	.08

Table 6 shows that there was no major difference between joint and nuclear family system in PSQ, PS, and mental well-being of young adults.

Table 7: Mean Differences between Men and Women in PSQ, PS, and Mental Well-Being

	Men (n=244)		Women (n=244)		*t(df)*	*p*
	M	*SD*	*M*	*SD*		
PS	20.37	6.29	21.95	6.26	-2.76(485)	.00
PSQ	9.74	3.67	9.48	3.74	.76 (483)	.44
Mental well-being	44.65	10.85	44.81	11.17	-.15 (486)	.87

Table 7 shows there were significant differences in PS between men and women. Moreover, women had higher PS as compared to men.

Table 8: Mean Differences between Public and Private Universities in Poor PS, PS, and Mental Well-Being

	Public Universities (n = 196)		Private Universities (n = 292)		*t(df)*	*p*
	M	*SD*	*M*	*SD*		
PS	20.95	5.91	21.29	6.59	-.57(485)	.56
PSQ	967	3.68	9.58	3.72	.27 (483)	.78
Mental well-being	44.85	10.67	44.65	11.23	.20 (486)	.83

Table 8 shows that scores determined no significant differences between public and private universities in PS, PSQ and mental well-being of young adults.

4.1. Summary of Findings
- The findings showed an intensely negative association between PSQ and mental well-being is significant positive association between PS and bad sleep quality.
- In young individuals, PS and inadequate sleep were unfavorable indicators of mental health.
- In addition, it was shown that a substantial mediator of the relationship between PS and mental health was PSQ.

5. Discussion
This study aimed to examine whether PSQ accounts for the relationship between perceptions of stress and mental health of young adults. The aim of the present study was to examine the association between PSQ, PS and mental health in young people. According to the findings of the present study, mental health and PS of young individuals are significantly correlated with PSQ. There are a number of theories explaining the link between young adults' perceptions of stress, sleep quality and mental health, and a number of studies support it. These studies have produced sufficient evidence supporting the relationship between young adults'

perceptions of stress, their quality of sleep, and their mental health. PS was hypothesized to be associated with PSQ. This part of the current research discusses the current results considering the theories and local content of previous studies. The current research finding demonstrated that PS is positively correlated with PSQ and PSQ is negatively correlated with mental wellbeing. It was hypothesized that there will be connection between PSes, PSQ and mental being in young adults. A supported research was conducted by College students who practice mindfulness report feeling less burnt out, although it is unclear how mindfulness mediates this association.

The findings indicated that mindfulness and burnout were negatively linked, and that the relationship between mindfulness and burnout was mediated by PS and sleep quality. Evidence from the literature supports the findings of this study that increasing mindfulness among college students enhances sleep and lessens stress perception, thereby preventing burnout (Gan, Xue, & Chen, 2023). A supported research discovered that medical students had an unusually high frequency of academic stress and PSQ. Academic pressures have been proven to significantly contribute to stress and sleep difficulties, and many medical students reported using sedatives more than once per week. These results emphasis the significance of attending to medical students' mental health needs and putting in place suitable interventions to enhance their well being (Waqas et al., 2015).

It was hypothesized that a lack of quality sleep is related to mental health. The association between PS, good mental health, and academic achievement among university students in Rawalpindi and Islamabad, Pakistan, was examined in a funded research study. The findings showed that PS had a considerable favorable influence on academic achievement but a significant detrimental impact on good mental health. The outcome of the study indicates that PS may have a major impact on university students' mental health and academic performance (Khan & Shamama-Tus-Sabah, 2020).

6. Conclusion
In summary, the study found that young individuals' perceptions of stress and mental health are connected to how well they sleep. It was shown that PS had an optimistic correlation with unpleasant sleep quality and a pessimistic association with mental health. Additionally, it was discovered that PS moderates the link between PSQ and mental health. No major differences were found in the variables, PS, PSQ and mental well-being connected to the family system, gender, or universities, according to further research. Existing research support the study's conclusions.

6.1. Limitations and Suggestions
The current study has a few limitations, which are described below. First, only young adults were included in the current study. Second, only university students are included in this study. Data were collected from only five universities. Thirdly, the promotion of universities differed: two universities were government, and three were private. Data were collected from the universities of Lahore, Pakistan. Fourthly, the data were not collected from a particular department. The sample size of this study was modest. Middle-aged adults and older adults should also be included in this study. In addition to university students, young adults who are employed, unemployed, or married should also be included in this study. Data were collected from universities; therefore, a large number of universities should be included in this study. In addition, data should be collected from universities in other cities, and if data were collected from a specific department, the results should be more satisfactory.

6.2. Strengths
The current research has several strengths. Both men and women are included in this study. These findings suggest a link between young people's perception of stress, PSQ and mental well-being. This study was not previously conducted in Pakistan. Further research revealed no differences in reported stress, PSQ, or mental health between gender, family structure, or public vs. private colleges. This study focuses on the current concerns of university students in the current era.

6.3. Implications
This study has a wide range of implications. This study raises awareness about proper sleep, PS, and mental well-being. This study will help us understand how stress and sleep quality

can be reduced. Stressful experiences lead to poor mental health and PSQ. Therefore, there is a need for a study to address this issue with reference to the Pakistani context. There is a need for interventions to improve the mental well-being and sleep quality of young adults. Therefore, this study aims to look at what can be done to design appropriate interventions. Better well-being can be promoted through different therapeutic approaches, campaigns and intervention measures. This study is valuable because it provides information about proper sleep and healthy patterns to cope with PS.

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