



Rumination, Anxiety & Sleep Quality Among Medical Professionals

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Abstract: Medical students and professionals frequently encounter high-stress environments that can heighten psychological distress and impair sleep quality. In medical settings, it is intensified by clinical decision-making, academic pressure, and interpersonal dynamics. Chronic rumination impairs mental health, increases stress, and disrupts sleep by preventing cognitive disengagement, ultimately affecting performance and well-being. This study examined the relationship between rumination, anxiety, and sleep quality among 100 participants (69 medical students, 31 professionals) using the Ruminative Response Scale, GAD- 7, and PSQI. Rumination and anxiety were significantly associated with poorer sleep quality ($r = -0.267$ and $r = -0.291$, respectively; $p < 0.01$), and positively correlated with each other ($r = 0.578$, $p < 0.01$). However, the regression analysis showed neither was a strong predictor of sleep quality. No significant group differences were found. Findings suggest that while rumination and anxiety impact sleep, other factors may play a greater role, warranting holistic psychological interventions.

Keywords: *Rumination, Anxiety, Sleep Quality, Medical Profession, Well-Being*

1. Introduction

Rumination, anxiety, and sleep quality are interlinked and can create a self-perpetuating cycle of distress. This research aims to explore how these factors independently and collectively affect medical students and professionals. Identifying these relationships can inform interventions

to support mental well-being and performance (Ehring, 2008; Harvey, 2008). This study examined the relationship between rumination, anxiety, and sleep quality among 100 participants (69 medical students and 31 medical professionals) through Spearman Rank Correlation to assess relationships between variables. In order to predict sleep quality based on rumination and anxiety, regression analysis and Mann–Whitney U-test was used to compare differences between students and professionals. Medical students reported slightly higher levels of rumination ($M = 2.35$, $SD = 0.77$) and anxiety ($M = 2.02$, $SD = 0.91$), and poorer sleep quality ($M = 3.59$, $SD = 0.95$) than professionals. This may be linked to academic pressures and erratic schedules among students, while professionals possibly benefit from better coping mechanisms and structured routines.

Table 1: *Descriptive analysis*

Group	Rumination	Anxiety	Sleep quality
Students	Higher	Higher	Poorer
Professionals	Lower	Lower	Better

Table 2: *Reliability analysis*

Construct	Cronbach's alpha	Number of items
Rumination	0.749	10
Anxiety	0.855	7
Sleep quality	0.780	8
Overall	0.703	25

The Shapiro–Wilk test showed non-normal distribution for all three variables, justifying the use of non-parametric tests:

Table 3: *Normality analysis using the Shapiro-Wilk test*

Variables	Statistics (Shapiro-Wilk)	Sig.(p-value)	Interpretation
Rumination	0.800	0.000	Not normally distributed
Anxiety	0.820	0.000	Not normally distributed
Sleep quality	0.850	0.000	Not normally distributed

Rumination and anxiety were positively correlated ($r = 0.578$, $p < 0.01$). Both rumination and anxiety were negatively correlated with sleep quality ($r = -0.267$ and -0.291 respectively, $p < 0.01$), indicating that higher distress is associated with poorer sleep.

Table 4: *Nonparametric correlation analysis (Spearman's rho)*

Variable	Overall rumination	Overall anxiety	Overall sleep quality
Overall rumination	1.000	0.578	-0.267
Overall anxiety	0.578	1.000	-0.291
Overall sleep quality	-0.267	-0.291	1.000

Note: $p < 0.01$

Regression models for both groups showed moderate correlations, but poor model fit, indicating that rumination and anxiety were not strong predictors of sleep quality.

Students: $R = 0.593$, $R^2 = 0.351$, Adjusted $R^2 = 0.135$, $p = 0.092$ (non-significant)

Professionals: $R = 0.691$, $R^2 = 0.478$, Adjusted $R^2 = -0.205$, $p = 0.758$ (non-significant)

Table 5: *Mann–Whitney U-test*

Variable	<i>Mann–Whitney U</i>	p-value	Significance
Rumination	1008.000	0.646	Non- significant
Anxiety	971.000	0.462	Non- significant
Sleep quality	1066.500	0.982	Non- significant

2. Discussion

This study examined the relationship between rumination, anxiety, and sleep quality among medical students and professionals, a population vulnerable to mental health challenges. Results showed a moderate negative correlation between both rumination and sleep quality ($r = -0.267$, $p <$

0.01), and anxiety and sleep quality ($r = -0.291$, $p < 0.01$), indicating that higher rumination and anxiety are associated with poorer sleep (Taylor et al. 2011). These findings are consistent with existing literature linking repetitive negative thinking and heightened arousal with sleep disturbances (Wen-Fu Qiu, Jian-Ping Ma, 2023); Md Dilshad et al, 2021); Jun Zhang et al.,

2024; Aiwen Sun, 2023).

However, the Mann–Whitney U-test revealed no significant differences between students and professionals in terms of rumination ($p = 0.646$) and anxiety ($p = 0.462$), suggesting that both groups experience similar levels of psychological distress. Though correlation existed, regression analysis did not identify rumination or anxiety as significant predictors of sleep quality (students: $p = 0.092$; professionals: $p = 0.758$), indicating the presence of other influencing factors.

The combined effect of rumination and anxiety accounted for some variance in sleep quality (students: $R^2 = 0.351$; professionals: $R^2 = 0.478$), but the adjusted R^2 values were low, and the overall model lacked statistical significance. This highlights the influence of external factors such as work schedules, lifestyle habits, and stressors on sleep disturbances.

Overall, while rumination and anxiety are related to poor sleep, they are not sole determinants. The findings support a multifactorial understanding of sleep disturbances, calling for holistic interventions.

3. Conclusion

This study found that rumination and anxiety are moderately correlated with poor sleep quality, but do not significantly predict it. Both medical students and professionals face comparable levels of psychological distress, reflecting common academic and occupational pressures.

The results highlight the complexity of sleep disturbances, influenced by multiple psychological and environmental factors. Interventions that go beyond managing rumination and anxiety such as targeting lifestyle and work-related stress are essential to improve sleep quality and mental health in this population.

3.1 Implications

Medical professionals and students are vulnerable to high stress, leading to increased rumination and anxiety. These factors contribute to poor sleep, fatigue, and emotional exhaustion, raising the risk of burnout. Sleep disturbances can impair both mental health and performance. Interventions like CBT and mindfulness-based techniques (meditation, breathwork) can reduce psychological distress and improve sleep. Integrating these practices into medical education and workplace wellness can serve as preventive care.

3.2 Suggestions for Future Research

The mediating variables such as stress levels, coping styles, and work-life balance. The research needs longitudinal studies to assess changes over time. The future research may include objective sleep assessments (e.g., actigraphy, polysomnography) for more accurate data.

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