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The Impact of Sleep on Academic Burnout with the Effects of Perceived Stress and General Well-being

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Abstract

This study investigated the correlation between sleep deprivation, sleep quality, perceived stress, and general well-being and whether they were risk or protective factors for academic burnout. The sample consisted of 61 female undergraduate students at Brescia University College and participants completed an online questionnaire. A correlational analysis and multiple regression model revealed a significant positive correlation with the three studied factors namely sleep deprivation, sleep quality, and perceived stress with academic burnout. However, general well-being was not significantly correlated. The model that best predicted burnout scores included the variables of sleep deprivation, sleep quality, and perceived stress. Together, these findings suggest that sleep deprivation, sleep quality, and perceived stress are all risk factors for academic burnout. The results from this study can be used in further research endeavours to investigate the protective factors of academic burnout, and to develop preventative techniques that focus on the three risk factors.

Keywords: sleep deprivation, sleep quality, perceived stress, general well-being, academic burnout, undergraduate, student population

The Impact of Sleep on Academic Burnout with the Effects of Perceived Stress and General

Well-being

University students deal with a multitude of stressors throughout their academic year, including but not limited to, an overload of course content, long class schedules, academic performance concerns, and personal obstacles. When associated with stress management difficulties, these stressors may favour the onset of burnout.

Burnout has become widely studied in the workforce as it has significant adverse effects. Burnout has been defined as a syndrome that results from chronic workplace stress that has not been successfully managed (Park et al., 2021). Research suggests three main symptoms of burnout which are emotional exhaustion, cynicism or depersonalization, and inefficacy (Kim et al., 2021). Emotional exhaustion refers to the experience of constant fatigue and low energy, as a person may not find joy or motivation in their daily activities. Cynicism or depersonalization describes when an individual begins to distance themselves from work and has a detached attitude in their relationships. Individuals may feel like they need help finding a purpose. The last symptom, inefficacy, refers to when someone does not have a sense of success or accomplishment, which can lead to self-disappointment and guilt surrounding their work. Although burnout is mainly experienced in the workplace, recent studies have examined the presence of burnout in students, referred to as academic burnout.

Throughout the school year, students deal with significant workloads that constitute high emotional and physical demands that can cause students to experience academic burnout. The symptoms of academic burnout can be compared to those of workplace burnout as students experience emotional exhaustion, cynicism or depersonalization, and inefficacy. In a meta-analysis conducted by Kim and colleagues (2021), 14 articles were investigated that looked at

academic burnout in students. The articles were analyzed to compare the results of the studies that measured whether academic burnout was a significant issue for students from different parts of the world. Their analysis found that students' academic tasks and requirements can be interpreted as work demands in school settings, and the subsequent stress they experience can lead to burnout. They also provided evidence for demand, control, and support as the main factors in the development of academic burnout. Demand refers to the pressure from the workload that students experience, control is defined as the aspects students can plan, organize, and have control over; and support refers to the love and communication students have with friends, family, and professors. This analysis provided precedent to further study academic burnout, its prevalence, and to identify predictors that can work as risk or protective factors for developing academic burnout.

There have been various studies that have attempted to look at differing factors that contribute to burnout. However, few specifically look at sleep quality and sleep deprivation, perceived stress, and general well-being. A study by Schaufeli and colleagues, (2002) demonstrated the relationship between academic burnout in students and engagement. In this study, engagement constituted different factors, such as stress experienced by students and their general well-being. This study did not look at sleep's impact on burnout, but it did establish a relationship between experiencing extreme stress and a high risk of burnout in students. In addition, the results showed that emotional exhaustion, cynicism, and inefficacy were most seen in students who lost engagement in school and personal activities. Further investigation would indicate these students were experiencing low general well-being. High stress and poor well-being could act as risk factors for burnout, whereas high well-being may be protective.

Investigation of certain factors concerning academic burnout still requires further exploration. Two of these factors include perceived stress and general well-being. Perceived stress refers to the degree of which events in a person's life are seen as stressful, unpredictable, and uncontrollable (Wang et al., 2019). Since students experience significant stress levels throughout the academic year, high perceived stress may be a risk factor for burnout. Stress has been researched as a significant contributor to developing burnout syndrome and may act as a risk factor for academic burnout in students. Burnout syndrome develops gradually from the inability to cope with high workloads, leading to high-stress levels (Hricova et al., 2020). Students are assigned numerous assignments, long class schedules, excessive studying for exams, and personal engagements that constitute vast workloads and stressful engagements. If not successfully managed, the workload may become overwhelming and consuming, leaving students with high perceived stress.

General Well-being is described as self-reported health based on thoughts, emotions, actions, and experiences (Davis, 2021). When individuals experience high general well-being, they feel happy, healthy, socially connected, and purposeful most of the time. For burnout, general well-being may act as a protective factor in developing academic burnout. Students are consumed with high levels of stress and workload, but feeling supported, happy, and generally well, could positively prevent burnout.

One of the most significant factors in developing burnout syndrome is the absence of sleep and a decline in sleep quality. Researchers have studied the interaction between sleep and burnout in the workplace and among students. It has been stated that sleep quality and sleep deprivation both play an important role in the risk of burnout. This is due to the excessive workload students endure throughout their academic year, and the amount of sleep loss they

experience as they are studying for exams and completing assignments (Pagnin et al., 2014). In addition, the quality of sleep they experience may decline due to irregular sleep schedules and stress over school (Pagnin et al., 2014). The lack of sleep and decreased sleep quality contribute to feelings of emotional exhaustion, depersonalization, and inefficacy seen in burnout syndrome. A study by Pagnin and colleagues (2014), demonstrated that the interaction between emotional exhaustion, poor sleep quality, and excessive daytime sleepiness significantly affected students leading to academic burnout. The students in this study were medical students who experienced increased workload and inconsistent schedules, resulting in burnout syndrome. This study provided evidence that the amount of sleep, and the quality of sleep individuals receive can be a leading factor in the risk of burnout, which is a significant issue for students.

Similar studies have looked at the interaction between sleep and burnout providing comparable results. In a study by Lehto and Partonen (2019), they explored the occurring relationship between sleep and academic burnout in secondary school students in Finland. The results concluded that sleep deprivation, tiredness, and poor sleep quality were associated with developing burnout syndrome, which was consistent with the study's results by Pagnin and colleagues (2014). A study by Wang and colleagues (2020) attempted to examine the relationship between sleep quality and coping techniques related to academic burnout in students. The study's results found that poor sleep quality had a positive association with academic burnout, and furthermore, that an active coping style helped protect against the effects of poor sleep quality. Poor sleep quality was shown to significantly affect academic burnout in students with negative coping styles and low general well-being. Although the relationship between lack of sleep, poor sleep quality, and burnout syndrome has been valiantly researched,

literature still lacks evidence that supports other predictors of burnout syndrome and whether they are protective or risk factors.

Academic burnout, sleep deprivation, sleep quality, perceived stress, and general well-being have been independently studied in the literature and have well-established measurement tools. Academic burnout has been measured by the Student Burnout Inventory (SBI) (Schaufeli et al., 2002), which was adapted from the Burnout Inventory to accommodate students. Sleep quality has been measured by the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989) and is readily used as a self-report measure. The measurement tool of sleep deprivation is the Epworth Sleepiness Scale (ESS) (Johns, 1991) which indicates the tiredness of participants. Perceived stress has been measured by the Perceived Stress Scale (PSS) (Cohen et al., 1994), and the measurement tool for general well-being is the General Well-Being Schedule (GWBS) (NIH CDE Repository, 2021). The measurement tools, in combination, create a self-reported questionnaire assessing each factor individually, and their interaction and effect on academic burnout.

Although the interaction between sleep quality and sleep deprivation with burnout has been researched, this study aims to explore the effects of risk and prevention factors contributing to academic burnout. The current study will investigate how sleep quality, sleep deprivation, perceived stress, and general well-being correlate with academic burnout. Since students experience high stress throughout their academic year, it will be investigated to see if their perceived stress coincides with an increased risk of burnout. This study will also look at whether their positive and negative emotions protect against burnout or act as a risk for burnout seen in their general well-being. It will look at the five factors: sleep deprivation, sleep quality, burnout, perceived stress, and general well-being and their relationships. It is hypothesized for this

experiment that low sleep quality and sleep deprivation will increase the risk of burnout, high perceived stress will increase the risk of burnout, and high general well-being will protect against burnout. It is also hypothesized that there will be a regression model that best predicts academic burnout.

Method

Participants

The target population consisted of first-year undergraduate students at Brescia University College. Specifically, these students were registered in an introductory psychology class in the Winter 2023 term. Participants were recruited online through the SONA system and were rewarded a research credit for their course. There were 65 participants in total with an all-female sample. The average age of participants was 20 years old.

Materials

The online Qualtrics questionnaire was made up of five measurement tools that measure the dependent variables of sleep deprivation, sleep quality, perceived stress, general well-being, and academic burnout. The study began with a Letter of Information about the study and indicated that the participant was providing their consent by completing the study. Participants were then asked to record their gender and age for demographic records. The questionnaire presented the five measurement tools where participants answered corresponding questions. The study ended with a Debriefing Form that explained the purpose of the study and provided resources for more information regarding burnout and emotional support.

The first measurement tool in the questionnaire was the GWBS. The GWBS is widely used in experimental research to evaluate the population's generally positive and negative thoughts and emotions. The GWBS was chosen to measure the dependent variable of general

well-being. It included questions regarding six factors: well-being, self-control, vitality, depression, anxiety, and general health. This questionnaire had 18 questions in total. Each item had the phrase "during the last month," and the first 14 questions used 6-point response scales representing intensity or frequency. The last four questions used 0-10 Likert scales. Lower scores on the scales represented distress, and higher scores represented positive well-being. For this study, four questions were eliminated due to their irrelevance to burnout, making the measurement 14 questions in total.

The next measurement tool in the questionnaire was the ESS. The ESS was chosen to measure the dependent variable of sleep deprivation. This measurement was used to determine, on average, how sleepy the participant was. The eight-question measurement used a 0-3 Likert scale to assess how likely it would be for the participant to fall asleep in different situations. Low scores indicated less likely to fall asleep in the situation while high scores represented more likely.

The third measurement in the Qualtrics survey was the PSQI. The PSQI was chosen to measure the dependent variable of sleep quality. It had 26 questions and was used to measure how well participants were sleeping and the quality of sleep within the past week. Seventeen questions were removed from this study due to their irrelevance to burnout resulting in only nine questions. The first four questions of the survey asked the participant to type in information on bedtime, length of time to fall asleep, wake-up time, and hours of sleep at night. The following five questions used a 0-4 Likert scale to indicate how many times in the past week those situations described in the question occurred—the more times a participant had trouble sleeping, choosing higher on the scale indicated a worse quality of sleep.

The fourth measurement in the questionnaire was the PSS. The PSS was chosen to measure the dependent variable of perceived stress as it evaluated how the participant thought or felt in the past month. It was a 14-question assessment that used a 0-5 Likert scale where 0 represents never, and five represents always. The higher the scores, the more perceived stress the participant was experiencing. Four questions were removed in this study due to their irrelevance to burnout.

The final measurement in the Qualtrics survey was the SBI. It was an 11-question assessment that used a 1-7 Likert scale to indicate strongly disagree to strongly agree with the statements given in the questions. This scale was chosen to measure the dependent variable of academic burnout. The SBI was used to determine if students were experiencing burnout in their academics. The higher the scores, the higher the risk of burnout. The questions in SBI revolved around emotional exhaustion, cynicism, and inefficacy, which are the leading factors associated with burnout.

Procedure

The participants in the study were recruited through the SONA system by Brescia University College and targeted students registered in Psychology 1015B in the Winter 2023 term. Participants signed up for the study online and completed the questionnaire individually at a time of their choosing before the closing date of March 13, 2023. The questionnaire took approximately 30-minutes to complete and consisted of a letter of information, demographic records, five measurement tools, and a debriefing form. Participants indicated their consent by completing the questionnaire. The five measurement tools in the questionnaire were the GWB, ESS, PSQI, PSS, and SBI.

Results

The data collected from the online questionnaire was analyzed with a correlational analysis and multiple regression model using Jamovi. Each factor was analyzed on their association with academic burnout. Four participants were excluded from the analysis due to incomplete data, leaving 61 participants.

The ESS was analyzed to see if sleep deprivation was a risk factor for academic burnout. The correlation matrix found a significant correlation between ESS and SBI (r (59) = 0.43, $p <$ 0.001, R^2 = 0.18). The relationship between ESS and SBI can be found in *Figure 1*. As the scores of ESS increase, the scores of SBI increase.

The PSQI was analyzed to see if poor sleep quality was a risk factor for academic burnout. The correlation matrix found a significant correlation between PSQI and SBI (r (59) = 0.47, $p <$ 0.001, R^2 = 0.22). The relationship between PSQI and SBI can be found in *Figure 2*. As the scores of PSQI increase, the scores of SBI increase.

The PSS was analyzed to see if perceived stress was a risk factor for academic burnout. The correlation matrix found that there was a significant correlation between PSS and SBI (r (59) = 0.54, $p <$ 0.001, R^2 = 0.30). The relationship between PSS and SBI can be found in *Figure 3*. As the scores of PSS increase, the scores of SBI increase.

The GWB was analyzed to see if general well-being is a protective factor for academic burnout. The correlation matrix found no significant correlation between GWBS and SBI ($p >$ 0.5).

Multiple regression was used to develop the model that best predicts SBI scores ($F_{(3, 57)}$ = 15.2, $p < .001$, $R^2 = 0.44$, Adjusted $R^2 = 0.42$, AIC = 134). Variables included in this model were PSS, ESS, and PSQI *(see Table 1)*.

Figure 1

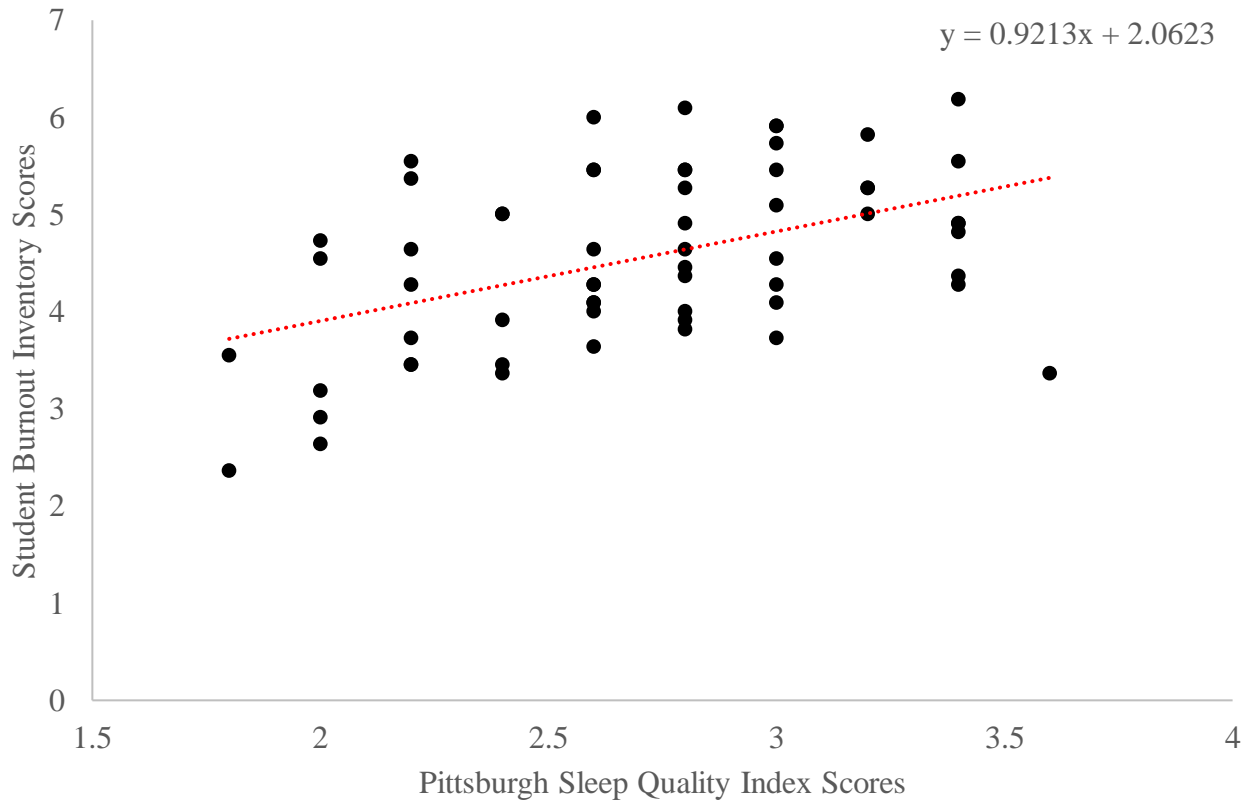*Relationship Between ESS and SBI Scores*
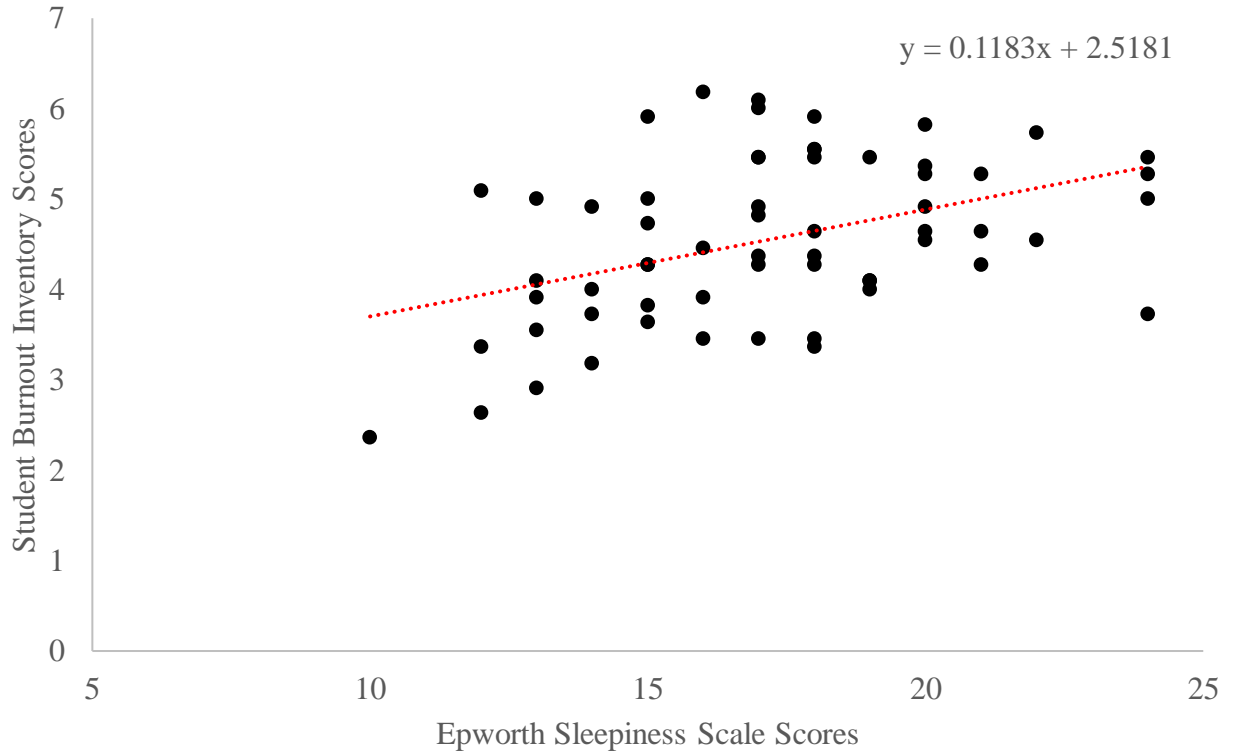
Note. There is a significant positive correlation between ESS and SBI scores, *p < 0.001, n = 61.*
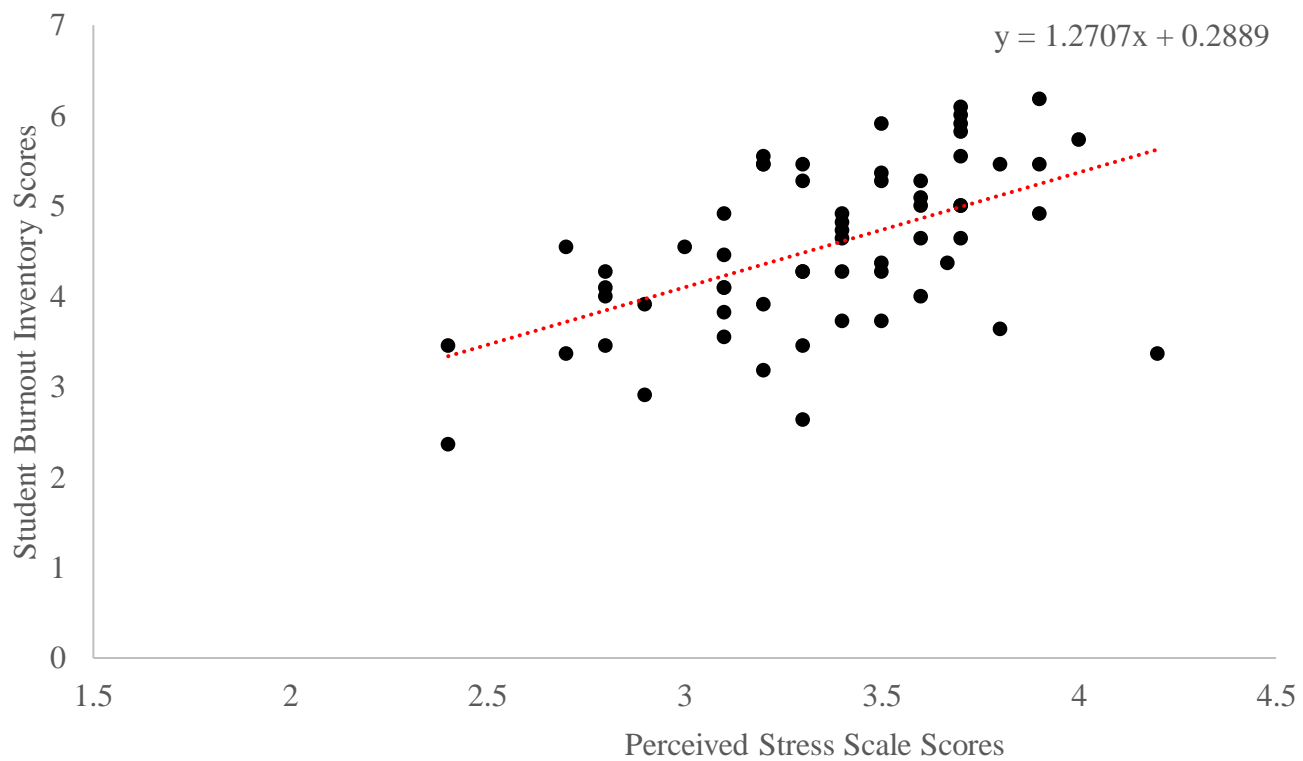
Figure 2

Relationship Between PSQI and SBI Scores

Note. There is a significant positive correlation between PSQI and SBI scores, *p < 0.001, n = 61.*

Figure 3

Relationship Between PSS and SBI Scores

$y = 1.2707x + 0.2889$

Note. There is a significant positive correlation between PSS and SBI scores, *p < 0.001, n = 61.*

Table 1

Model Coefficients - SBI

Predictor	Estimate	SE	t	p
Intercept	-1.0972	0.8598	-1.28	0.207
PSS	0.8123	0.2619	3.10	0.003
ESS	0.0818	0.0284	2.88	0.006
PSQI	0.5607	0.2145	2.61	0.011

Note. *n = 61.*

Discussion

The results of the analysis found three positive correlations with academic burnout: sleep deprivation, poor sleep quality, and perceived stress. It was hypothesized that participants experiencing sleep deprivation, poor sleep quality, and high perceived stress would be more at risk for academic burnout. In contrast, participants experiencing high general well-being would be protected from academic burnout. These results are consistent with the hypotheses, except for general well-being. General well-being was included because it was expected to be negatively correlated with academic burnout, but there was not a significant relationship. The positive correlations between academic burnout and the three factors demonstrated that as the scores of each factor increased, the academic burnout scores increased. This suggests that as students are more sleep deprived, have worse quality of sleep, and feel more stressed, their risk for burnout increases. These findings add to the literature identification of three risk factors for academic burnout as well as a model for predicting burnout.

In comparison to previous research, this study was the first to explore the risk factors of sleep deprivation, sleep quality, perceived stress, and general well-being on academic burnout in conjunction with each other. It has been noted that academic burnout is a significant issue in students as their academic workload and requirements are comparable to occupational demands which puts students at risk for burnout (Kim et al., 2021). The current study supports this conclusion as burnout symptoms were prevalent in the sample population of university students. Prior studies established the relationship between sleep and burnout syndrome and suggested poor sleep quality and sleep deprivation may be risk factors for burnout (Pagnin et al., 2014). Current results on sleep quality and sleep deprivation agree with previous research as there is a significant relationship between sleep quality and sleep deprivation with academic burnout. This

study adds a model of best fit for predicting burnout to the literature that also includes perceived stress. Perceived stress as a risk factor for burnout has been investigated previously but not with the addition of the other predictors (Hricova et al., 2020). The current study supports the association of perceived stress and academic burnout as there was a positive correlation between stress and burnout scores.

An interesting finding to note regarding the factors of sleep quality and sleep deprivation was that they were independent measures. In previous studies, the impact of sleep and lack of sleep on burnout has been established but having two different components of sleep allowed for a stronger model of predicting burnout. When only one of the measures was included in the model, the estimate percentage decreased. Sleep deprivation and sleep quality, measured by the PSQI and ESS, provided results on two different factors regarding sleep. The PSQI measured the quality of sleep students were getting while the ESS measured how tired the participants felt on a regular basis. The inclusion of these different measurements allowed there to be a more sensitive measure of sleep impact on academic burnout.

There were a few limitations of the study that could be improved for future research. This study attempted to look at general well-being as a protective factor for academic burnout but did not find significant results. The GWB scores covered a very restricted range of scores where the participants were all very similar in their responses. This restricted range made it difficult to assess the role of GWB. In the future, a more sensitive measure of general well-being would be beneficial. The current study also used an all-female sample due to access to participants, therefore future experiments may choose to explore gender differences in academic burnout. The sample size of 61 participants was lower than the needed participant number of 85 that was generated by G*Power at the beginning of the study. This means that assuming a medium effect

size, 85 participants were needed to achieve power of 0.80. A higher sample size in future research would allow the study to meet the power requirements.

Additionally, the results of this study could be used in future research to further investigate the protective and risk factors for academic burnout. There was a positive correlation between sleep deprivation, sleep quality and perceived stress with academic burnout but protective factors have yet to be established that could counteract the risk factors. This study looked at general well-being, but the impact of social support or physical activity may negatively correlate with academic burnout for students. This analysis could also be used as evidence for creating prevention techniques for academic burnout in students that focuses on sleep hygiene and stress management. Understanding the risk factors for academic burnout, and creating prevention techniques for them, would significantly benefit students. Since burnout is very relevant and experienced by many students, learning how to prioritize sleep, successfully manage time, or reduce stress may protect against burnout.

In conclusion, this study found that sleep deprivation, sleep quality, and perceived stress were risk factors for academic burnout and were included in the model of best fit for predicting burnout. These results highlight the importance of good sleep and stress management as a student. Awareness of these risk factors will be helpful in maintaining good sleep throughout school and managing stress to reduce the risk of academic burnout.

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