Sleep Quality among College Students: The Role of Binge-Watching and Stress

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ABSTRACT: The purpose of this study was to determine the effect of binge-watching and stress on student sleep quality. This study uses a quantitative method with a correlation approach with data collection techniques in the form of filling out a sleep quality scale, watching parties, and stress. The research instrument adapts the sleep quality scale (Buysse et al., 1989), the binge-watching scale of Forte et al., (2021) and the stress scale of Cohen et al., (1983). This study involved 355 Indonesian students who were taken by purposive sampling technique. This study uses multiple linear regression analysis. The results of this study indicate the value of the t test with a significance of 0.000 (≤ 0.50). Based on these results, it can be understood that the more often students engage in binge-watching behavior and feel stressed, the worse the individual sleep quality will be. It is expected that students will be able to reduce behaviors that also affect sleep.

KEYWORDS: sleep quality, binge-watching, stress and college students

INTRODUCTION

Sleep is a human physiological need with a known influence on individuals' mental health and quality of life (Alotaibi et al., 2020). Sleep is homeostatically regulated, meaning sleep increases in duration and intensity after a long time without sleep. In addition, circadian rhythms are also responsible for the tendency to wake or sleep within 24 hours (Besedovsky et al., 2019). Human sleep behavior, aspects of sleep quality, and characteristics depend on several physiological and mental factors (Crivello et al., 2019). The sleep recommended by most medical personnel requires adequate sleep duration, consistency in initiating sleep, and no symptoms of sleep disturbances (Ohayon et al., 2017).

Severe sleep deprivation will impact the individual's health, well-being, and biological function (Li et al., 2020). Sleep quality is a state of individual satisfaction when awakened from sleep (Fenny & Supriatmo, 2016; Maisa et al., 2021). In the school-age group with the early adult age group, it was noted that it was better to have 7-8 hours of sleep at night. Many school-age individuals and this early adult group do not have optimal sleep quality (Herawati & Gayatri, 2019).

In a study conducted in the German community, the prevalence of poor sleep quality was 36% in individuals aged between 18 to 80 years (Hinz et al., 2017). Research using the Pittsburgh Sleep Quality Index (PSQI) shows differences in student outcomes in each country. Ethiopia offers a high number, namely 55.8% of students with poor sleep quality. Students at Andalas University in Indonesia, with a prevalence of 43%, showed poor sleep quality coupled with poor academic achievement (Nilifda et al., 2016; Stefanie & Irawaty, 2019).

This can impact mood disorders, fatigue, impaired concentration, and poor academic performance (Li et al., 2020). Sleep disturbances felt by these individuals have a risk of advanced sleep disorders such as insomnia, which makes the symptoms worse (Novianti & Suadnyana, 2022). Students usually face challenges, such as tremendous academic pressure, social obligations, responsibility for themselves, tentative schedules, and internet addiction (Li et al., 2020). However, due to the acceleration of technology, individuals rarely pay attention to the quality of their sleep. This acceleration of technology causes daytime disturbances such as fatigue, lack of focus, and a decline in productivity (Kuntari, 2021). Screen use in accelerating technology among young adults with high screen activity is significantly associated with lower sleep quality (Wang & Bíró, 2021).

The development of communication technology and the Internet of Things (IoT) makes individuals more active in interacting, which brings radical changes to the world of technology, such as television (Zahara & Irwansyah, 2020). Television shows and movies can be watched on online streaming sites such as Netflix, Hotstar, and Amazon Prime or illegally downloaded, making television and movie content easily accessible (Fortune, 2017). This has contributed to the development of a way of enjoying television programs commonly known as Binge-watching.

Binge-watching is watching many serial dramas/television shows in a row, especially all the episodes in one series (Merikivi et al., 2020). *Populix* researched the use of Video on Demand (VoD) in Indonesia with a survey conducted on 3423 respondents; 52% said they enjoyed binge-watching (Populix, 2020). Vaterlaus's research also states that the more often students engage in binge-watching behavior, the more likely it is to develop into dependence. When doing binge-watching, students make them skip bedtime and choose to watch in a row until late at night (Muin et al., 2022).

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Individuals who binge-watching are stated because of the fulfillment of the need for information and entertainment and as a diversion to the problems of everyday life (Starosta et al., 2020). Students do binge-watching to serve as facilitators in conducting academic procrastination to avoid perceived academic pressure. Academic pressure and stress felt by students were also stated as their motivations for binge-watching (Vaterlaus et al., 2019). The prevalence of Asian students shows that 39.6% to 61.3% that students feel stressed, while Indonesian students have a plurality of 36.7% to 71.6% (Ambarwati et al., 2019).

All activities carried out by college students are usually inseparable from stress due to internal and external factors. The internal factor that exacerbates the state of stress in students is the ability to participate in teaching and learning activities. External factors have an impact, such as academic assignments, pressure from parents, and demands for tuition fees (Gamayanti et al., 2018). The stress felt by students is one of the factors that cause sleep disturbances. Final year students showed a higher level of stress than other levels. Times of tension and anxiety can affect sleep or make it difficult for individuals to fall asleep (Clariska, 2020).

A study conducted by 'Ashrifah (2021) on students at the Muhammadiyah University of Surakarta showed that students with high-stress levels would experience poor sleep quality. Stress is due to increased hormones, namely, cortisol, epinephrine, and norepinephrine, which are directly related to the central nervous system. As a result, when stress occurs, the body signals to remain in a responsive state, which increases the central nervous system's activity. This hormone causes disturbances in the form of *Non-Rapid Eye Movement* (NREM) and *Rapid Eye Movement* (REM) (Wahyuni, 2018). Disruption from student stress can affect sleep quality; college students tend to think about problems and academic pressures that cause a lack of adequate sleep. This harms health, such as quickly tired, impaired focus, irritability, and long-term that will be felt, namely heart problems, and diabetes (Bianca et al., 2021)

This study aims to prove several hypotheses. The primary hypothesis is that the sleep quality of college students is influenced by binge-watching and stress. The minor hypothesis is that the influence of sleep quality is 1) the influence of binge-watching on the sleep quality of college students and 2) the influence of stress on the sleep quality of college students.

METHOD
Research Participants
Participants in this study included 355 students out of the total Indonesian college students. The sampling technique used is purposive sampling with several categories, such as active Indonesian college students who like to watch drama series or tv series for more than one hour and have sleep disorders. Participants were dominated by students from Surabaya (33%), Jakarta (12%), and Sidoarjo (10%). Detailed information about the participants can be found in Table 1.

Research Procedures
The data this study were taken based on an instrument adapted from an English-language tool translated into Indonesian and adapted to the Indonesian culture. The scale used is sure to measure sleep quality, binge-watching, and stress in Indonesian students. The scale is also adjusted to the data needed and adapted to the habits of Indonesian college students and the categories that have been determined. The scale is adjusted to the online questionnaire on Google Form and distributed through several student conversation groups, organizations, etc.

Research Instrument
The measuring instrument on the sleep quality variable uses a research scale adapted from the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989) which consists of 16 items with 7 aspects namely, 1) Subjective Sleep Quality; 2) Sleep Latency; 3) Sleep Duration; 4) Habitual Sleep Efficiency; 5) Sleep Disturbance; 6) Use of Sleeping Medication and 7) Daytime Dysfunction.
The measuring instrument on the Binge-watching uses a research scale adapted from the Binge-watching Addiction Questionnaire (Forte et al., 2021), which consists of 19 items with three aspects: watching motivation, watching engagement, and Structural Characteristics of Series.
The measuring instrument on the Stress uses a research scale adapted from the Perceived Stress Scale (Cohen et al., 1983), which consists of 9 items with three aspects: 1) Feeling of Unpredictability; 2) Feeling of Uncontrollability, and 3) Feeling of Overloaded. The measurement scale used is the Likert scale type which has four alternative answers such as Never, Very Rarely, Often, and Very Often.

Statistical Analysis
The analysis was used to determine the effect of binge-watching and stress on the sleep quality of college students using multiple regression analysis. The entire analysis was assisted by using IBM SPSS Statistics 26 for Windows. Before performing various regression analyses, prerequisite tests must be met, such as Normality, Linearity, Multicollinearity, and Heteroscedasticity.

RESULT
Validity And Reliability
The item validity test using the Bivariate Pearson technique was carried out with the help of the analysis from IBM SPSS Statistics 26 for Windows. Items can be valid, namely having a correlation value above the r table of the correlation (Azwar, 2017). In this research, the weight of the R table with a significance level (5%) was found to be 0.104. So, it can say that if the item correlation value is less than 0.104, the item will be declared invalid.

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The reliability test with Cronbach's Alpha technique was carried out with the help of the analysis from IBM SPSS Statistics 26 for Windows. If the alpha value is > 0.60 (more than 0.60) on the items on the research scale, it can state that the things are reliable (Sujarweni, 2014).

Hypotheses Testing

There are three hypotheses in this research. Based on the results of the T-test conducted on the binge-watching variable, the significance value was less than 0.05, namely 0.000 (0.000 <0.05), and it can be concluded that binge-watching affects sleep quality. The stress variable found that the significance value was less than 0.05, namely 0.000 (0.000 <0.05), which could be concluded that stress affected sleep quality. The analysis was also carried out in the presence of a t-table comparison. The t-table used is (0.025;352), obtained from the formula t (a/2;n-k-1). Detailed information about the comparation can be found in Table 1.

The analysis was also carried out in the presence of a comparison of F tables. The F-table (2:353) obtained from the formula f (k; n-k). So, we get f count > f table with a value of 32,974 > 3.86. It can be concluded that the third hypothesis is accepted and that binge-watching and stress simultaneously affect college students' sleep quality.

Table1. Participan's Demograpic Data (N=355)

Variable	%	N	Variable	%	N
Gender			Education		
Male	83	295	Diploma	9	32
Female	17	60	Bachelor	81	323
Age			Domicile		
17-20 Tahun	43	153	Javanese People	95	336
21-40 Tahun	57	202	Outside Java	5	19

Table 2. T-table Comparation

Variable	T-value	T-table	Result
Binge-watching	5.525	2.251	Hypothesis accepted
Stress	3.603	2.251	Hypothesis accepted

DISCUSSION

The research objective was to determine the effect of binge-watching and stress on student sleep quality. This study uses multiple linear regression analysis models and techniques with the classical assumption test as a prerequisite for carrying out the method. Classical assumption tests include normality, linearity, multicollinearity, and heteroscedasticity tests.

Based on the results of the classical assumption test, it was found that the distributed data was normally distributed with a significance value of 0.200 or > 0.05 (more than 0.05). The linearity test shows a linear relationship between variables with a significance of .154 > 0.05 or more than 0.05. In the multicollinearity test, it was concluded that there were no symptoms of multicollinearity with a tolerance value of more than 0.10, namely 0.874 (0.874 > 0.10) and a VIF value of more than 10.0, namely 1.144. In the Heteroscedasticity test, there is no Heteroscedasticity, meaning that the observations can be reused both with small and large samples. With the conclusion criteria, the spread of the dots is evenly distributed. It spreads around the number 0, the distance of the beads is not focused on one area, the space of the dots does not form a specific pattern such as waves, conical and widening, and the spread of bubbles does not describe a way.

In the presence of the influence of binge-watching and stress on student sleep quality, multiple linear regression analysis was used to determine the effect of the binge-watching variable, and it was found that the significance value was less than 0.05, i.e., 0.000 (0.000 < 0.05) on sleep quality. On the influence of the stress variable and it was found that the significance value was less than 0.05, namely 0.000 (0.000 <0.05), it can be concluded that stress affects sleep quality.

In the results of the T-test, based on the t table on the binge-watching variable, the calculated t value is greater than the t table with a value of 5.525 > 2.251, and H1 is accepted, which can be concluded that there is a partial effect on the binge-watching variable on sleep quality. Based on the t table on the stress variable, the calculated t value is greater than the t table with a value of 3,603 > 2,251, which can be concluded that there is a partial effect of the stress variable on sleep quality. In the analysis of the f test, it was found that f count > f table with a value of 32,974 > 3.86. It can be concluded that the third hypothesis is accepted, and binge-watching and stress simultaneously affect students' sleep quality.

The results of the regression test between binge-watching and sleep quality align with Muin et al., (2022) that there is a significant effect between binge-watching and student sleep quality; students lose their sleep to binge-watching. Until late at night. The long-watching habit of students who practice binge-watching makes students tend to reduce their nighttime sleep. This causes disturbances in the sleep cycle, such as short sleep duration, long sleep latency, and so on. Sleep disturbances felt by these individuals have a risk of advanced sleep disorders such as insomnia, which makes the symptoms worse (Novianti & Suadnyana, 2022).

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Poor sleep quality impacts individual health, social, physical, and quality of life (Hendi Aryadi et al., 2018). Poor sleep quality is also associated with daytime fatigue, unstable vital signs, and decreased body immunity (Budyawati et al., 2019). This also impacts mood disorders, fatigue, impaired concentration, and poor academic performance in college students (Li et al., 2020).

In the results of the cross-tabulation of subjects based on domicile, it was explained that residences within the island of Java had more poor sleep quality. The frequency of the issues obtained, namely 66% of students from Jabodetabek, Surabaya, and Sidoarjo, dominated poor sleep quality. This is consistent with the research conveyed by Situngkir et al., (2022) that individuals in the Greater Jakarta area have poor sleep quality due to an unhealthy lifestyle and other factors, such as the work environment, excessive caffeine consumption, and active smokers. In line with research conducted on Surabaya students, it was stated that sleep patterns and changes in activities carried out by students, heavy work, and being involved in social activities late at night can affect students' sleep quality (Wicaksono et al., 2013).

Another study that discusses binge-watching, which is directly related to sleep quality, states that about 6.7% of respondents binge-watching every day for one month. This study also says that binge-watching frequency is associated with poor sleep quality, feeling tired more often, and having an impact on insomnia (Exelmans & Van den Bulck, 2017). The use of gadget screens can also affect individual sleep disorders. On-screen use in accelerated technology among young adults with high screen activity is significantly associated with poor sleep quality (Wang & Bíró, 2021).

Student motivation in binge-watching is supported by a desire to fulfill the information; academic pressure and stress felt by students are also expressed as their motivation for binge-watching (Vaterlaus et al., 2019). The results of the regression test in this study are also proven by Clariska's research (2020) which states that the stress students feel one of the factors that cause sleep disorders. Final year students showed a higher level of stress than other levels. Times of tension and anxiety can affect sleep or make it difficult for individuals to fall asleep (Clariska, 2020).

The relationship between stress and sleep quality has been reported in a study conducted by Larue & Herrman (2008), which states that stress can reduce sleep quality in individuals. Stress activates the sympathy-adreno-medullary (SAM) system and the hypothalamic-pituitary (HPA) axis. This causes an increase in stress hormones such as cortisol and catecholamines. A decrease in cortisol is required in the initiation of sleep so that the rise in the hormone cortisol can reduce sleep duration in Rapid Eye Movement (REM), which can cause cognitive dysfunction (Ramamoorthy et al., 2019).

All activities carried out by students are usually inseparable from the stress that occurs due to internal and external factors. Internal factors in students that can cause stress are the ability to participate in teaching and learning activities. External factors have an impact, such as academic assignments, pressure from parents, and demands for tuition fees (Gamayanti et al., 2018). Disruption from student stress affects sleep quality; college students tend to think about academic problems and pressures that cause a lack of adequate sleep. This harms health, such as being quickly tired, impaired focus, irritability, and long-term that will be felt, namely heart problems and diabetes (Bianca et al., 2021).

CONCLUSION

In the results of research conducted by researchers on the effect of binge-watching and stress on the sleep quality of students, several final results were obtained. Based on the results of analysis tests conducted on the impact of binge-watching and sleep quality, it can be concluded that there is a partial effect on the variable binge-watching on student sleep quality. The higher or more frequent binge-watching behavior, the worse the college students' sleep quality.

Based on the results of analysis tests conducted on the effect of stress and sleep quality, it can be concluded that the stress variable has a partial impact on the sleep quality of college students. The higher the stress level, the worse the sleep quality of college students. The results of the accepted analysis test on the effect of binge-watching and stress on the sleep quality of college students are stated to have a significant and simultaneous impact.

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