



Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self-Reported Health Status Among Adults

Bhawna Yadav

PhD Scholar, Physiology, Physiology, SGT University, Haryana Gurgaon – 122005, Email: stepbhawnayadav02@gmail.com

Received: 08/05/2026 | Revised: 10/08/2026 | Accepted: 13/09/2026 | Published: 25/09/2026

ABSTRACT

Lifestyle behaviors, sleep patterns, and perceived stress are important modifiable factors that may influence physical and psychological well-being as well as how adults perceive their overall health. This study aimed to assess the association of lifestyle behaviors, sleep patterns, and perceived stress with self-reported health status among adults. A quantitative, questionnaire-based cross-sectional study was conducted among 80 adults using a structured 20-item questionnaire covering demographic characteristics, lifestyle behaviors, sleep patterns, perceived stress, and self-reported health status. Descriptive statistics included frequencies, percentages, means, and standard deviations, while chi-square tests, Spearman correlation, and multiple regression analyses were used to examine associations among the main variables. The findings showed that healthier lifestyle behaviors and better sleep patterns were associated with more favorable self-reported health, whereas greater perceived stress was associated with poorer health perceptions. Sleep demonstrated the strongest positive relationship with health status. Significant associations were also observed for smoking or tobacco use, adequate sleep, regular sleep schedules, and daytime tiredness. Regression analysis further confirmed that lifestyle behaviors, sleep patterns, and perceived stress independently contributed to self-reported health status. Overall, the findings highlight the combined importance of healthy lifestyle practices, adequate sleep, and effective stress management in supporting better health and well-being among adults.

Keywords

Lifestyle behaviors; Sleep patterns; Perceived stress; Self-reported health; Adults

1. INTRODUCTION

Adopt healthy lifestyle practices to ensure a healthy physical, psychological and social life during adulthood. Every day activities can affect weight, heart health, emotions, energy, and feelings of well-being. Common factors identified as key parts of a healthy lifestyle include getting regular exercise, eating a balanced diet, not smoking, having no more than moderate alcohol consumption and limiting recreational screen time. Mixed unhealthy behaviours can lead to worse mental health and attitudes to health. Healthy health behaviours have been linked to greater mental health and positive self-reported

health in adults in research that has looked for trends in health behaviors (Ofstedal et al., 2019).

Physical activity is an important modifiable lifestyle factor as it helps with cardiovascular fitness, weight management, psychological well-being, functional capacity. Good food habits also help people to balance their nutrition and can help to prevent chronic health conditions. Conversely, other activities such as smoking, drinking excessive alcohol, sitting for long periods of time or watching too much television could have a negative impact on physical and mental well-being. Previous research in adults has shown that

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

health behaviors are related to better health-related quality of life, and higher stress levels are related to poorer self-reported health-related quality of life (Vilchez-Chavez et al., 2023). Some of the negative impacts of stress on self-rated health may also be helped by healthy lifestyle behaviors, suggesting that behaviors have a protective effect (Nordgren et al., 2022). Another indispensable part of adult health is the sleep. Good sleep quality and duration are essential for physical recovery, cognitive function, emotional regulation, metabolic balance and performance. Poor or disrupted sleep can lead to tiredness in the day, difficulty concentrating, irritability, decreased productivity, and decreased overall well-being. The evidence indicates that sleep is related to mental health and other lifestyle behaviors and therefore, sleep problems should be seen in a wider context of behaviors and psychological status. Additionally, poor sleep has been linked with poorer self-reported health, which would mean that people who have sleep problems may perceive their health as poorer (Dalmases et al., 2019).

Health behaviors and sleep patterns can also be affected by perceived stress. Stress can lead to unhealthy eating habits, decreased exercise, sleep problems and other stress-related behaviors that impact overall health. The self-efficacy to perceive or cope with stress have been linked to everyday physical behavior, suggesting that the experience and coping of stress could be influenced by daily activity patterns. The relationship between lifestyle, sleep, and psychological well-being is also evident in the fact that physical activity has been linked to improved quality of sleep and life satisfaction and reduced stress levels (Wang & Boros, 2019).

There may also be differences in stress-related patterns based on dietary and demographic factors. Increased BMI in young adults has been positively correlated with increased perceived stress and reduced sleep quality (Dakanalis et al., 2024). Eating behaviors, dietary risk, sleep and body mass index have also been associated with perceived stress, with some associations varying by gender (Du et al., 2022). The results show that some of the factors of stress, sleep, and lifestyle behaviors are inter-related and may all play a role in a person's health. Self-reported health status is a valuable indicator of people's perceptions of

their overall health. It may reflect physical function, psychological status, normal activity and even health-related restrictions. Among adults, unhealthy lifestyles partially mediate the effect of work-related stress on suboptimal health, suggesting that unhealthy behaviors may act as a pathway for work-related stress to affect health (Lu et al., 2024).

Unhealthy lifestyle habits such as physical inactivity, unhealthy food habits, excessive screen time, inadequate sleep, smoking, alcohol consumption and persistent psychological stress are increasingly being placed on adults. These factors can be interrelated. Stress can disrupt sleep and eating patterns, and heightened emotional functioning can be a result of poor sleep, which can lead to less motivation to be physically active. These multilevel patterns may have a negative impact on the people's perception about their overall health. There are several studies that have investigated lifestyle factors, sleep or stress individually, but few studies have investigated the association of these factors together in a single adult population with self-reported health status. It is critical to look at them together, because there are likely multiple behavioral and psychological risk factors that interact to affect the health of adults.

Previous studies have shown associations between lifestyle behaviors, sleep and stress, and health outcomes. However, numerous studies have been conducted on single behavioral factors, certain populations or a few specific outcomes. There are fewer studies that have examined the lifestyle behaviors, sleep, perceived stress, and self-reported health status simultaneously in one analytical framework. It is therefore important to have an integrated assessment to gain insight into the relationship between these modifiable factors and adults' perception of their overall health. This evidence can help inform actionable health promotion strategies to support healthy behaviours, better sleep and managing stress. This paper therefore seeks to evaluate the relationship between self-reported health status, lifestyle behaviors, sleep pattern and perceived stress among the adults.

Objectives

- 1.To assess lifestyle behaviors, sleep patterns, perceived stress, and self-reported health status among adults.

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

2.To determine the association between lifestyle behaviors and self-reported health status.

3.To examine the relationship of sleep patterns and perceived stress with self-reported health status.

2. MATERIALS AND METHODS

2.1 Study Design

Cross sectional study design was used in this study with a quantitative approach, using a questionnaire to investigate the relationship between lifestyle behaviors, sleep pattern and perceived stress with perceived health status for adults. Structured questionnaire was used to collect data at a single time.

2.2 Study Population and Sample Size

The study comprised adults of 18 years and older who were keen to participate and could fill out the questionnaire. The final study sample consisted of 80 participants.

2.3 Sampling Technique

Participants were recruited using a convenience sampling technique because they were easily accessible and willing to participate in the study. To ensure the analysis of eligible participants, only those who completed the questionnaire were enlisted.

2.4 Eligibility Criteria

Those who were willing to participate, understood the questionnaire and able to provide full answers were included, as long as they were 18 years of age or older. People under 18, who refused to cooperate and those who returned questionnaires that were substantially incomplete were excluded.

2.5 Data Collection Instrument

The data were collected from a structured 20-item questionnaire which was designed based on the purpose of the study. The questionnaire included five parts related to demographic characteristics, lifestyle behaviors, sleep habits, perceived stress, and self-reported health status. Demographic variables such as age, gender, marital status, education and employment were included in the demographic questions. Lifestyle factors included

physical activity, diet, smoking/tobacco use, processed foods and recreational screen time. Items rated for evaluation of adequate sleep, sleep regularity, sleep difficulty, and daytime tiredness were sleep-related items. The items in the perceived stress scale measured stress associated with activities of daily living and impact on functioning, and the last section measured overall self-reported health status.

2.6 Study Variables

Lifestyle behaviors, sleep pattern and perceived stress were the independent variables and self-reported health status was the dependent variable. Background variables analyzed were demographic characteristics, such as age, gender, marital status, education and employment status.

2.7 Data Collection Procedure

Eligible participants were explained the purpose of the study and the voluntary nature of participation. Informed consent was obtained and the questionnaire was handed out to be filled out. All questionnaires completed were checked for completeness, coded and entered into a database for analysis.

2.8 Statistical Analysis

Descriptive and inferential statistics were used to analyze data. Categorical data were summarized as frequencies and percentages; numerical/composite data were summarized as mean and standard deviation as appropriate. Association between categorical study variables tested using the chi-square test. Pearson or Spearman correlation (as applicable) was used to explore relationships between lifestyle behaviours, sleep behaviours, perceived stress and self-reported health status. The contributions of lifestyle behaviors, sleep patterns and perceived stress to self-reported health status were identified using regression analysis. A level of $p < 0.05$ was used for statistical significance.

2.9 Ethical Considerations

All participants were informed about the study and consented to participate. Nothing that identified individuals was gathered and all responses were anonymous and for research only. Participants were free to drop out of the study at

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

any time without consequences.

3. RESULTS

3.1 Demographic Characteristics of Participants

The demographic profile demonstrated a distribution of age, gender, marital status, education and employment. Most of the sample

consisted of younger adults and both males and females were well represented. A significant share of the participants was single and most were educated upto higher secondary or graduate level. The largest single occupational group was employment. Details on the demographic distribution are provided in Table 1.

Table 1. Demographic characteristics of respondents (N = 80)

Characteristic	Category	n	%
Age group	18-25 years	26	32.5
	26-35 years	21	26.2
	36-45 years	21	26.2
	46-55 years	6	7.5
	Above 55 years	6	7.5
Gender	Female	42	52.5
	Male	37	46.2
	Prefer not to say	1	1.2
Marital status	Single	41	51.2
	Married	31	38.8
	Widowed	7	8.8
	Divorced/Separated	1	1.2
Education	Higher secondary	26	32.5
	Graduate	24	30.0
	Postgraduate or above	20	25.0
	Secondary or below	10	12.5
Employment	Employed	36	45.0
	Student	14	17.5
	Self-employed	14	17.5
	Retired	7	8.8
	Unemployed	5	6.2
	Homemaker	4	5.0

3.2 Lifestyle Behaviors

Lifestyle responses showed that there was a combination of healthy and unhealthy lifestyles. Most of the people are physically active and eat fruits and vegetables, but smoking and tobacco use were relatively uncommon. Meanwhile, among participants, there was some recreational screen time and occasional fast or processed food intake. These behaviours are summarized in Table 2.

Table 2. Distribution of major lifestyle behaviors

Lifestyle behavior	Most common response	n	%
Physical activity	Often	29	36.2
Fruit/vegetable intake	Often	37	46.2

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

Fast/processed food intake	Sometimes	28	35.0
Smoking/tobacco use	Never	54	67.5
Recreational screen time >4 hours	Sometimes	32	40.0

The overall pattern of lifestyle scores is illustrated in Figure 1, which shows the distribution of favorable lifestyle behavior among respondents.

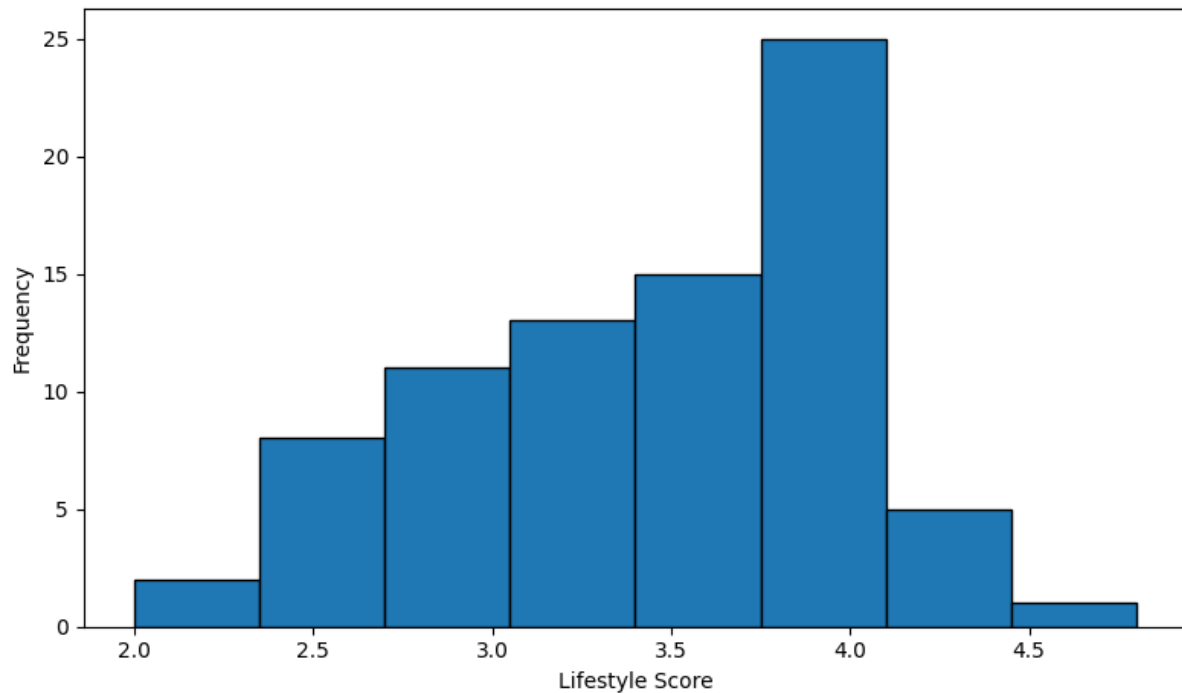


Figure 1. Distribution of Lifestyle Behavior Scores Among Participants

3.3 Sleep Patterns

Sleep responses were variable in terms of sleep quality, sleep regularity, sleep initiation, sleep continuity, and daytime sleepiness. Favorable sleep routines were reported by some participants while others reported experiencing irregular sleep patterns and daytime consequences due to poor sleep. The sleep responses are detailed in Table 3.

Table 3. Distribution of sleep-pattern responses

Sleep variable	Most common response	n	%
Adequate sleep	Often	25	31.2
Regular sleep schedule	Sometimes	26	32.5
Difficulty falling/staying asleep	Sometimes	24	30.0
Daytime tiredness from poor sleep	Sometimes	28	35.0

The overall sleep-score distribution is shown in Figure 2, reflecting variability in sleep quality and regularity across the study population.

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

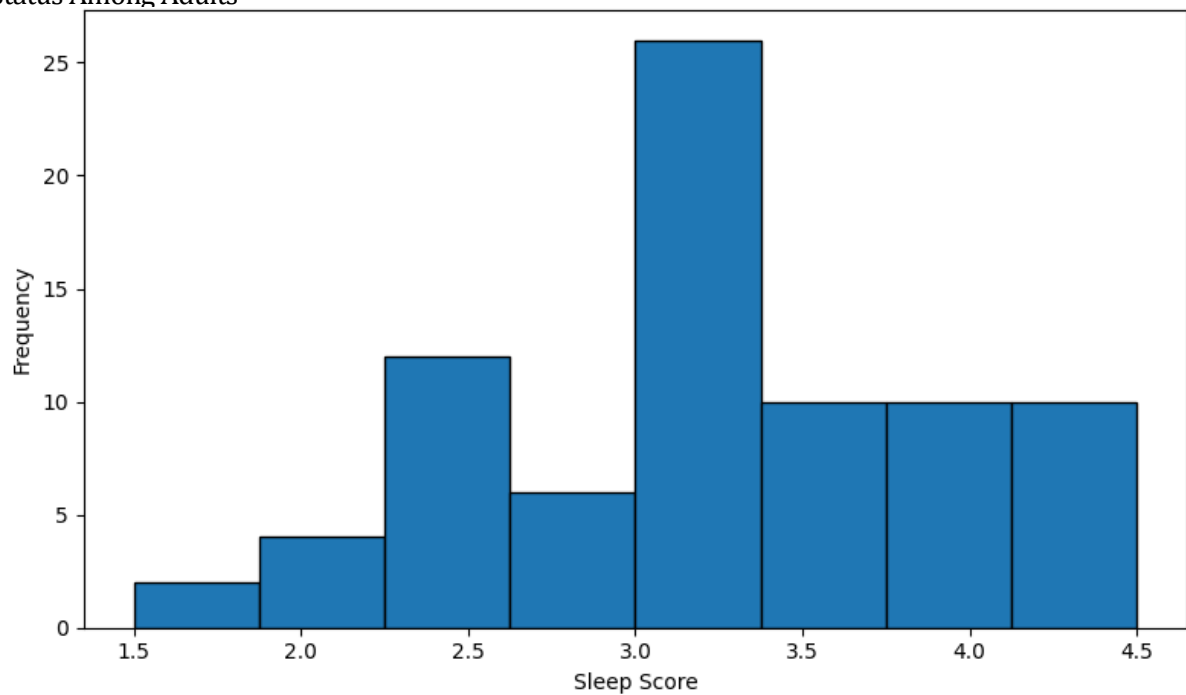


Figure 2. Distribution of Sleep Pattern Scores Among Participants

3.4 Perceived Stress

Perceived stress was frequently reported for daily responsibilities, feeling overwhelmed, inability to relax and interference with daily activities. The reactions indicated that stress was a significant experience for a considerable number of the respondents. The distribution of detailed data is presented in Table 4.

Table 4. Perceived stress among participants

Stress indicator	Most common response	n	%
Stress from daily responsibilities	Sometimes	38	47.5
Feeling overwhelmed by responsibilities	Sometimes	43	53.8
Difficulty relaxing because of stress	Sometimes	42	52.5
Stress interfering with daily activities	Sometimes	37	46.2

The distribution of perceived stress scores is presented in Figure 3, illustrating differences in stress levels across respondents.

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

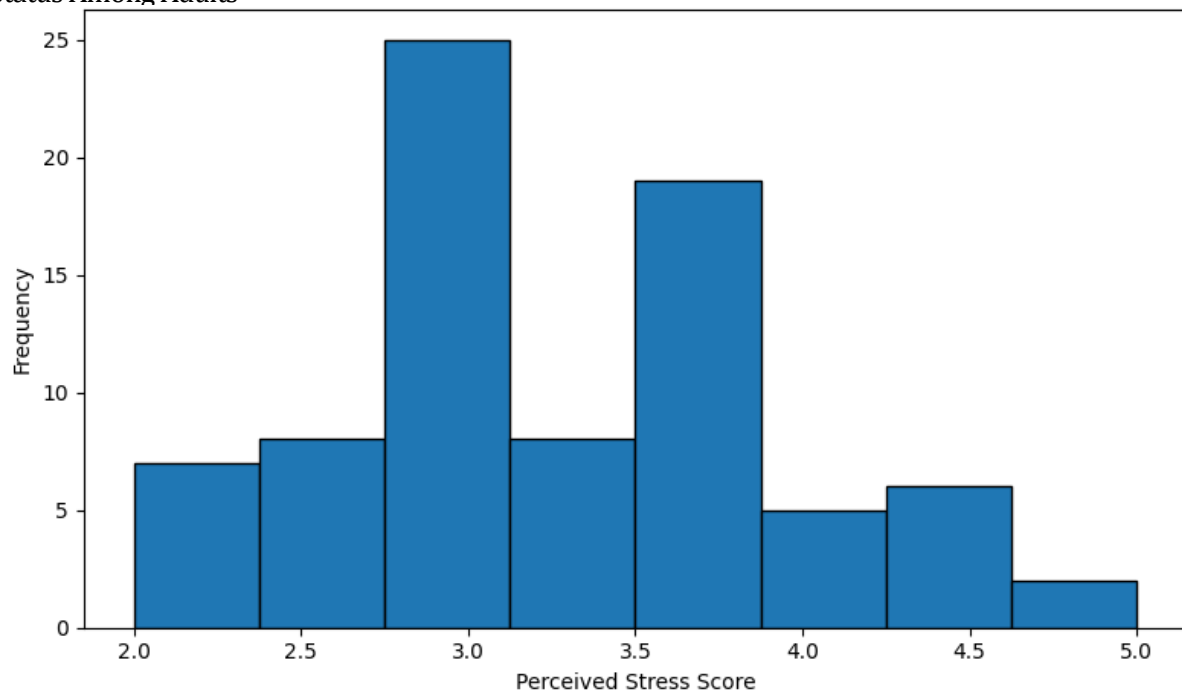


Figure 3. Distribution of Perceived Stress Scores Among Participants

3.5 Self-Reported Health Status

Overall, most participants rated their health and wellbeing as good or very good, with responses focused on these two options. A smaller percentage said they were in fair health; very few said they had excellent health for both their body and mind relative to their peers. The distribution is given in detail in Table 5.

Table 5. Self-reported health status

Health indicator	Category	n	%
Overall health	Fair	9	11.2
	Good	47	58.8
	Very good	24	30.0
Physical and mental well-being vs peers	Fair	11	13.8
	Good	43	53.8
	Very good	24	30.0
	Excellent	2	2.5

3.6 Association of Lifestyle and Sleep Behaviors with Overall Health

The chi-square test was used to test if any individual lifestyle and sleep related behaviors were related to overall self-reported health status. Some behavioral and sleep related factors were significantly associated, while several other lifestyle factors failed to show a statistically significant association. The detailed results are shown in Table 6.

Table 6. Chi-square associations between behavioral factors and overall health status

Variable	χ^2	df	p-value	Significance
Physical activity	12.017	8	0.150	Not significant
Fruit/vegetable intake	7.140	8	0.522	Not significant
Fast/processed food intake	6.150	8	0.631	Not significant
Smoking/tobacco use	20.157	8	0.010	Significant
Recreational screen time >4 h	15.280	8	0.054	Not significant
Adequate sleep	20.638	8	0.008	Significant
Regular sleep schedule	26.753	8	<0.001	Significant
Difficulty falling/staying asleep	13.015	8	0.111	Not significant
Daytime tiredness	16.178	8	0.040	Significant

3.7 Correlation Between Lifestyle, Sleep, Stress, and Health Status

The chi-square test was used to test if any individual lifestyle and sleep related behaviors were related to overall self-reported health status. Several other lifestyle factors did not have a statistically significant association, but some behavioral and sleep related factors had a significant association. The detailed results are presented in table 6.

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

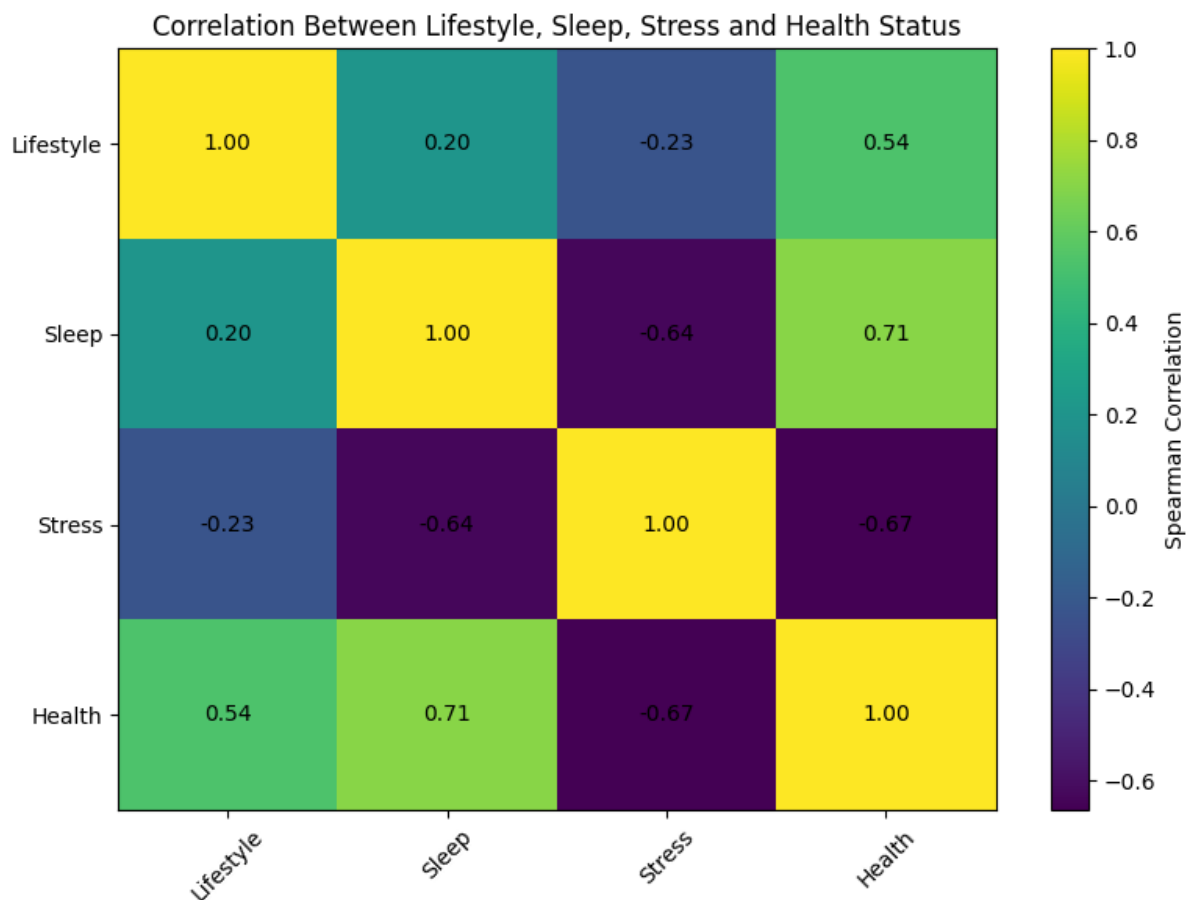


Figure 6. Correlation Heatmap of Lifestyle, Sleep, Perceived Stress, and Health Status

3.8 Multiple Regression Analysis

Multiple regression analysis was used to assess the independent effect of lifestyle behaviors, sleep and perceived stress on self-reported health status. The overall model demonstrated a high explanatory relationship and all the three major predictors made statistically significant contributions. Lifestyle and sleep were positively associated with health status while perceived stress was negatively associated with health status. Table 8 shows the results of the regression.

Table 8. Multiple regression predicting self-reported health status

Predictor	B	SE	t	p-value	95% CI
Constant	1.382	0.473	2.921	0.005	0.440 to 2.325
Lifestyle score	0.400	0.065	6.139	<0.001	0.270 to 0.530
Sleep score	0.397	0.067	5.890	<0.001	0.263 to 0.531
Perceived stress score	-0.251	0.072	-3.502	0.001	-0.394 to -0.108

The regression model explained a substantial proportion of variation in health status, supporting the combined importance of lifestyle behaviors, sleep patterns, and perceived stress in

understanding differences in self-reported health among adults.

4. DISCUSSION

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

The present study investigated the relationship between lifestyle behaviors, sleep, and perceived stress and self-reported health among adults. The main conclusions indicated that a healthier lifestyle pattern and better sleep were correlated with more positive self-rated health and higher perceived stress was correlated with more negative self-rated health. The sleep factor was the most positive with health status, and perceived stress was the most negative with health status among the main study variables. The results imply that adult perceptions of health are not only behavioral but also psychological in nature and are not determined by one health behavior.

There was an important relationship between self-reported health and lifestyle behaviours. Those who had healthier lifestyle patterns were more likely to report that they were in good health overall. This is in line with the trends that have been found in other evidence that health behaviors tend to cluster together and are influenced by demographic, social and behavioral factors. Alothman et al. (2024) found that there were differences in lifestyle behaviors for university students depending on some personal and behavioral features, indicating that healthy lifestyle behaviors might be interrelated. Oftedal et al. (2019) also reported links between diet, physical activity, sedentary behavior, and sleep and socio-demographic or health-risk factors. The results under support the significance of the investigation of lifestyle as a whole behavioral pattern.

Only smoking or tobacco use was significantly associated with the self-reported health status, and the rest of the individual lifestyle variables were not independent significant variables. This can mean that some behaviours have a more obvious influence when viewed within a lifestyle profile. Hruby et al. (2018) also reported on the relationship between self-reported health behaviors such as sleep and other lifestyle factors with medically informed health conditions. This mirrors the current result which concluded that there is a better relationship between wider patterns of behaviour and health status than with individual lifestyle factors.

In this study sleep proved to be one of the strongest factors associated with health. Health status was significantly and positively correlated with better sleep scores, and daytime tiredness

and regular sleep pattern were also significantly related to health status. Kim et al. (2019) found that there was a close relationship between sleep duration and perceived stress, suggesting that both inadequate sleep and excessive sleep may be associated with decreased psychological health. These results confirm the importance of sleep with respect to psychological and general health.

Perceived stress was negatively related to health status and was a significant variable in the regression analysis. This suggests that in spite of accounting for lifestyle and sleep factors, higher stress levels are linked to lower positive health perceptions. Hirooka et al. (2021) found that perceived stress and coping ability was associated with several health-related behaviors, indicating that psychological stress may impact behaviours in everyday life. The authors of the study, Znazen et al. (2021), also found relationships between stress perception, lifestyle behaviours and cognitive functioning, and that stress could have a wide range of impacts on health and behaviours.

The observed relationships may be affected by occupational and social factors. Lee and Park (2019) concluded that self-rated health, daily stress, and sleep were related to employment status changes among young adults. In a similar study, the lifestyle patterns and perceived stress of nurses were found to be associated with rotating shift work, which was observed by Chiang et al. (2022). The results of these findings suggest that the conditions of work and working hours may be a factor in the differences in sleep, stress and health-related behaviors.

The interaction between dietary behavior and psychological stress and sleep might be in play. Emotional eating and perceived stress were positively related in university students while sleep quality was negatively related. The results of these studies indicate that dietary habits could be part of a broader chain of events linking lifestyle, stress, sleep and health.

Physical activity was also significant for the overall pattern of health but not in the chi-square analysis. Positive correlation between the overall lifestyle score and the health status shows that physical activity is one of the factors in a healthier lifestyle. Peng and Ren (2024) found that physical activity and leisure-time sedentary behavior were related to perceived stress among adults, suggesting that movement behaviors could have an impact on

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

adults' psychological well-being and health perceptions.

The findings have implications for health promotion for adults. Interventions that promote the adoption of multiple behaviors such as regular physical activity, healthy eating habits, quitting smoking, sleeping better, and managing stress effectively may be more effective than single-behavior interventions. The areas of sleep quality and stress reduction are especially worth focusing on due to the strong relationships with self-reported health.

There are several limitations of the study. Because of the cross-sectional design, causal conclusions should not be drawn and the sample size of 80 participants might affect the generalizability of the findings. However, the responses may have been subject to recall or response bias and small expected cell frequencies occurred in some of the chi-square analyses. Larger and more diverse samples, longitudinal designs, and objective measures of sleep and physical activity are recommended for future studies. The effects of demographic, occupational and nutritional factors on the association between lifestyle behaviours, stress, sleep and health status could also be explored further.

5. CONCLUSION

The present study showed that lifestyle behaviors, sleep pattern and perceived stress was meaningfully associated with self-reported health status among adults. Overall better lifestyle patterns were associated with better perceived health and sleep was one of the most significant influences associated with positive health status. Good night's sleep and consistent sleep patterns seemed to be particularly significant, whilst daytime tiredness and disturbed sleep was related to less favourable health perceptions. Self-reported health was significantly and negatively related to perceived stress, suggesting that a higher level of perceived stress could lead to poorer physical and mental health. The results further indicate that lifestyle factors are to be taken into account in the context of each other, not separately from one another. Physical activity, diet, smoking, screen time, sleep, and ways of managing stress can all interact, potentially affecting one another's impact on self-health. The results of the regression confirmed the results

from the previous analysis that lifestyle, sleep and stress factors each had independent effects on health status. This study demonstrates the value of integrated health promotion programs that promote healthier behaviors during the day, better sleeping habits, and effective stress management. The results are limited by the cross-sectional design and small sample size, but they offer valuable information to help understand factors that can be modified for adult health. Larger and more diverse populations should be studied in the future.

References

1. Alothman, S. A., Al Baiz, A. A., Alzaben, A. S., Khan, R., Alamri, A. F., & Omer, A. B. (2024, January). Factors associated with lifestyle behaviors among university students—a cross-sectional study. In *Healthcare* (Vol. 12, No. 2, p. 154). MDPI.
2. Chiang, S. L., Chiang, L. C., Tzeng, W. C., Lee, M. S., Fang, C. C., Lin, C. H., & Lin, C. H. (2022). Impact of rotating shifts on lifestyle patterns and perceived stress among nurses: A cross-sectional study. *International journal of environmental research and public health*, 19(9), 5235.
3. Dakanalis, A., Voulgaridou, G., Alexatou, O., Papadopoulou, S. K., Jacovides, C., Pritsa, A., ... & Giaginis, C. (2024). Overweight and obesity is associated with higher risk of perceived stress and poor sleep quality in young adults. *Medicina*, 60(6), 983.
4. Dalmases, M., Benítez, I., Sapiña-Beltran, E., Garcia-Codina, O., Medina-Bustos, A., Escarrabill, J., ... & de Batlle, J. (2019). Impact of sleep health on self-perceived health status. *Scientific reports*, 9(1), 7284.
5. Du, C., Adjepong, M., Zan, M. C. H., Cho, M. J., Fenton, J. I., Hsiao, P. Y., ... & Tucker, R. M. (2022). Gender differences in the relationships between perceived stress, eating behaviors, sleep, dietary risk, and body mass index. *Nutrients*, 14(5), 1045.
6. Hirooka, N., Kusano, T., Kinoshita, S., & Nakamoto, H. (2021). Influence of perceived stress and stress coping adequacy on multiple health-related lifestyle behaviors. *International journal of environmental research and public health*, 19(1), 284.
7. Hruby, A., Lieberman, H. R., & Smith, T. J. (2018). Self-reported health behaviors, including sleep, correlate with doctor-informed medical conditions: data from the 2011 Health Related

Association of Lifestyle Behaviors, Sleep Patterns, and Perceived Stress with Self Reported Health Status Among Adults

- Behaviors Survey of US Active Duty Military Personnel. *BMC Public Health*, 18(1), 853.
8. Kim, H. J., Oh, S. Y., Joo, J. H., Choi, D. W., & Park, E. C. (2019). The relationship between sleep duration and perceived stress: findings from the 2017 Community Health Survey in Korea. *International journal of environmental research and public health*, 16(17), 3208.
9. Lee, E. S., & Park, S. (2019). Patterns of change in employment status and their association with self-rated health, perceived daily stress, and sleep among young adults in South Korea. *International Journal of Environmental Research and Public Health*, 16(22), 4491.
10. Lu, C., Zhang, Z., Li, D., Huang, C., Liu, C., Peng, J., ... & Xu, J. (2024). The mediating effect of lifestyle behaviors on the relationship between self-perceived work stress and suboptimal health status: a cross-sectional study involving Chinese urban workers. *Public Health*, 236, 396-403.
11. Nordgren, L., von Heideken Wågert, P., Söderlund, A., & Elvén, M. (2022). The mediating role of healthy lifestyle behaviours on the association between perceived stress and self-rated health in people with non-communicable disease. *International journal of environmental research and public health*, 19(19), 12071.
12. Oftedal, S., Kolt, G. S., Holliday, E. G., Stamatakis, E., Vandelanotte, C., Brown, W. J., & Duncan, M. J. (2019). Associations of health-behavior patterns, mental health and self-rated health. *Preventive medicine*, 118, 295-303.
13. Oftedal, S., Vandelanotte, C., & Duncan, M. J. (2019). Patterns of diet, physical activity, sitting and sleep are associated with socio-demographic, behavioural, and health-risk indicators in adults. *International journal of environmental research and public health*, 16(13), 2375.
14. Peng, J., & Ren, H. (2024). The association of physical activity and leisure-time sedentary behavior with perceived stress among Chinese adults: A cross-sectional study based on the Chinese health and nutrition survey data. *Preventive Medicine Reports*, 45, 102829.
15. Vilchez-Chavez, A. F., Bernal Altamirano, E., Morales-García, W. C., Sairitupa-Sanchez, L., Morales-García, S. B., & Saintila, J. (2023). Healthy habits factors and stress associated with health-related quality of life in a Peruvian adult population: a cross-sectional study. *Journal of multidisciplinary healthcare*, 2691-2700.
16. Wang, F., & Boros, S. (2019). The relationship between physical activity, stress, life satisfaction and sleep quality. *Journal of Physical Education and Sport*, 19, 227-234.
17. Znazen, H., Slimani, M., Bragazzi, N. L., & Tod, D. (2021). The relationship between cognitive function, lifestyle behaviours and perception of stress during the COVID-19 induced confinement: Insights from correlational and mediation analyses. *International Journal of Environmental Research and Public Health*, 18(6), 3194.