

# Research on Lifestyle Habits Caused by Stress

Fumihiro Omasu<sup>1\*</sup>, Ai Kawano<sup>2</sup>, Maiko Nagayasu<sup>2</sup>, Asuka Nishi<sup>2</sup>

<sup>1</sup>Department of Health and Nutrition, Faculty of Health and Nutrition, Yamagata Prefectural Yonezawa University of Nutrition Sciences, Yamagata, Japan

<sup>2</sup>Department of School Health, Faculty of Education, Kumamoto University, Kumamoto, Japan

Email: \*omasu@yone.ac.jp

**How to cite this paper:** Omasu, F., Kawano, A., Nagayasu, M. and Nishi, A. (2022) Research on Lifestyle Habits Caused by Stress. *Open Journal of Preventive Medicine*, 12, 190-198.

<https://doi.org/10.4236/ojpm.2022.129014>

**Received:** August 29, 2022

**Accepted:** September 24, 2022

**Published:** September 27, 2022

Copyright © 2022 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

Many psychogenic issues trigger issues in children, such as refusal to attend school or bullying. That is to say, there are risks of serious problems occurring, such as suicide or mental illness, when such stress is a relatively large factor in that person's life and they are unable to adapt thereto. Therefore, with this research, we sought to clarify the relationship between lifestyle habits and the seven stress responses of depression, anxiety, anger, emotional responses, seclusion, physical fatigue, and hyperactivity of the autonomous nervous system, and based on our results, we investigated the ways in which school nurses can support younger students who experience such psychogenic issues. The subjects of our investigation included 341 university students (123 males and 218 females). We had the subjects complete a measurement of their degrees of stress and a survey about their lifestyle habits. The results indicated that the higher the stress level, lifestyle rhythms were disturbed, especially with regards to diet, and that there were differences between males and females as well. The results also suggested that the higher the stress level, the less amount of rest. This research revealed that increased stress leads to disturbances in lifestyle habits. Some examples of ways in which school nurses can support students include creating an environment in which it is easier for younger students to talk to school nurses, conducting health consultation activities in coordination with teachers and relevant organizations, and ascertaining information regarding the circumstances of younger students. Thus, it is thought that building better lifestyle habits will make it easier to cope with stress, thereby leading to better balance in mental and physical health.

## Keywords

Lifestyle Habits, Stress Responses, University Students

## 1. Introduction

In recent years, a high number of issues, such as refusal to attend school or bullying, in children have been occurring [1] [2] [3]. Circumstances that are considered triggers leading to children refusing to attend school are divided into: bullying; interpersonal circumstances; school-related circumstances such as anxiety concerning student performance; home-related circumstances such as changes in living environments; and personal circumstances in school such as emotional disturbances [4] [5] [6]. Each of these situations is considered to be associated with a large number of psychogenic issues. Therefore, it is thought that serious problems, such as suicide or mental illness, can occur when that stress is a relatively large factor in that person's life and they are unable to adapt thereto.

The correlation between stress and lifestyle habits has been confirmed in previous research [7]. For example, there are clear effects of lifestyle habits, such as dietary, exercise, or sleep habits, on health and lifespan [7] [8] [9]. It has also been indicated that there are various psychological factors that contribute to the occurrence of diseases related to lifestyle habits, such as heart disease, diabetes, or obesity, and that stress is a major psychological factor [10] [11].

We decided to conduct a detailed investigation in this study, concerning the relationship between lifestyle habits and the seven stress responses of depression, anxiety, anger, emotional responses, seclusion, physical fatigue, and hyperactivity of the autonomous nervous system. We also decided to clarify the relationships between these stress responses and lifestyle habits.

Moreover, lifestyle habits gradually form after a number of years, so it is thought that there is major significance in investigating the conditions of students, who are at the initial stage of the formation of such habits. To this end, this research involved a questionnaire survey conducted among university students. It is thought that the results can be used by school nurses to help support younger students who face such psychogenic issues and allow them to provide guidance regarding lifestyle habits.

## 2. Methods

Excluding participants who did not provide complete answers, there was a total of 341 valid responses (average age of 20.5 years, with 123 males (average age of 19.9 years) and 218 females (average age of 20.8 years)). The questionnaires were anonymous and participants circled the most appropriate number for each question.

We measured the degree of stress responses of each respondent using the "Stress Self-Assessment for University Students [12]". The survey contained 20 questions, divided into the degrees for each of the seven items of emotional responses (depression, anxiety, anger), cognitive/behavioral responses (emotional responses, seclusion), and physical responses (physical fatigue, hyperactivity of the autonomous nervous system). For the answers, students selected either "Not applicable", "Somewhat applicable", "Fairly applicable" or "Very applicable". In

our measurement, we assigned points and totaled the points of all questions as follows: 0 points for “Not applicable”, 1 point for “Somewhat applicable”, 2 points for “Fairly applicable” and 3 points for “Very applicable”. Accordingly, the maximum score was 105 points, while the minimum score was 0 points.

In order to conduct a survey on the lifestyle habits of the subjects, we referenced a check sheet that was part of a workplace mental health check [13] [14]. There were 10 questions, divided into the categories of general lifestyle, exercise, diet, and rest. For each question, respondents selected either “Never”, “Sometimes”, or “Always”. In our measurement, we assigned points and totaled the points of all items as follows: 0 points for “Never”, 1 point for “Sometimes” and 2 points for “Always”. Accordingly, the maximum score was 20 points, while the minimum score was 0 points.

With regards to stress, we calculated the total points of each respondent and calculated the total points of the four categories of general lifestyle, exercise, diet, and rest, then expressed the results using the average value  $\pm$  standard deviation for each. Next, we calculated the correlation coefficients between the total points of stress and the total points of each lifestyle habit. The level of significance of the correlation coefficients was set to less than 5% for each.

### 3. Results

The average score for stress and lifestyle habits is displayed in **Table 1**. The overall average score was  $24.7 \pm 20.2$  points. The average score for males was  $25.1 \pm 21.9$  points, while the average score for females was  $24.5 \pm 19.3$  points. The overall average score for general lifestyle was  $10.3 \pm 3.7$  points. The average for males was  $10.3 \pm 4.0$  points, while the average for females was  $10.4 \pm 3.6$  points. The overall average score for exercise was  $7.8 \pm 4.3$  points. The average for males was  $9.0 \pm 4.7$  points, while the average for females was  $7.2 \pm 3.9$  points. The overall average score for diet was  $11.3 \pm 4.1$  points. The average for males was  $10.3 \pm 4.1$  points, while the average for females was  $11.8 \pm 4.0$  points. The overall average score for rest was  $12.6 \pm 3.9$  points. The average for males was  $12.1 \pm 4.1$  points, while the average for females was  $12.8 \pm 3.8$  points.

The relationships between stress and lifestyle habits are shown in **Table 2**. Overall, the correlation between stress and general lifestyle was  $-0.38$  ( $p < 0.01$ ), which is a significant negative correlation. Moreover, the correlation between stress and general lifestyle was  $-0.38$  ( $p < 0.01$ ) for males and  $-0.38$  ( $p < 0.01$ ) for females, both of which are significant negative correlations. Overall, the

**Table 1.** Average score and standard deviations of stress and lifestyle habits.

	Stress	General lifestyle	Exercise points	Diet points	Rest
Overall	$24.7 \pm 20.2$	$10.3 \pm 3.7$	$7.8 \pm 4.3$	$11.3 \pm 4.1$	$12.6 \pm 3.9$
Male	$25.1 \pm 21.9$	$10.3 \pm 4.0$	$9.0 \pm 4.7$	$10.3 \pm 4.1$	$12.1 \pm 4.1$
Female	$24.5 \pm 19.3$	$10.4 \pm 3.6$	$7.2 \pm 3.9$	$11.8 \pm 4.0$	$12.8 \pm 3.8$

**Table 2.** Correlation coefficients between stress and general lifestyle.

	General lifestyle	Exercise	Diet	Rest
Overall	-0.38**	-0.27**	-0.19**	-0.36**
Male	-0.38**	-0.30**	-0.17	-0.35**
Female	-0.38**	-0.25**	-0.21**	-0.37**

Note: \*\*indicates  $p < 0.01$ .

correlation between stress and exercise was  $-0.27$  ( $p < 0.01$ ), which is a significant negative correlation. Moreover, the correlation between stress and exercise was  $-0.30$  ( $p < 0.01$ ) for males and  $-0.25$  ( $p < 0.01$ ) for females, both of which are significant negative correlations. Overall, the correlation between stress and diet was  $-0.19$  ( $p < 0.01$ ), which is a significant negative correlation. Moreover, the correlation between stress and diet was  $-0.17$  ( $p < 0.01$ ) for males, which is a significant correlation, but was  $-0.21$  ( $p < 0.01$ ) for females, which is significant negative correlation. Overall, the correlation between stress and rest was  $-0.36$  ( $p < 0.01$ ), which is a significant negative correlation. Moreover, the correlation between stress and rest was  $-0.35$  ( $p < 0.01$ ) for males and  $-0.37$  ( $p < 0.01$ ) for females, both of which are significant negative correlations.

The overall relationships between stress and lifestyle habits for each category are shown in **Table 3**. There were significant negative correlations overall between stress (depression, anxiety, anger, emotional responses, seclusion, physical fatigue, and hyperactivity of the autonomous nervous system) and lifestyle habits (general lifestyle, exercise, diet, and rest).

The relationships between stress and lifestyle habits for each category for males are shown in **Table 4**. While there was no significant correlation between stress (depression, anxiety, anger, emotional responses, and seclusion) and diet, there was a significant negative correlation with other lifestyle habits. There was a significant negative correlation between physical fatigue and lifestyle habits. While there was no significant correlation between hyperactivity of the autonomous nervous system and diet, there was a significant negative correlation with other lifestyle habits.

The relationships between stress and lifestyle habits for each category for females are shown in **Table 5**. There were significant negative correlations overall between stress (depression, anger, emotional responses, seclusion, and physical fatigue) and lifestyle habits. While there was no significant correlation between anxiety and diet, there were significant negative correlations with other lifestyle habits. While there was no significant correlation between hyperactivity of the autonomous nervous system and general lifestyle, there was a significant negative correlation with other lifestyle habits.

#### 4. Discussion

General lifestyle is an item that indicates whether or not one's lifestyle rhythm is

**Table 3.** Overall correlations between each category of stress and lifestyle habits.

	General lifestyle	Exercise	Diet	Rest
Depression	-0.28**	-0.22**	-0.17**	-0.21**
Anxiety	-0.29**	-0.19**	-0.12*	-0.27**
Anger	-0.23**	-0.17**	-0.14	-0.23**
Emotional responses	-0.38**	-0.25**	-0.18**	-0.25**
Seclusion	-0.34**	-0.30**	-0.20**	-0.30**
Physical fatigue	-0.36**	-0.22**	-0.23**	-0.33**
Hyperactivity of the autonomous nervous system	-0.19**	-0.14	-0.13	-0.31**

Note: \*indicates  $p < 0.05$ , while \*\*indicates  $p < 0.01$ .

**Table 4.** Correlations between each category of stress and lifestyle habits in males.

	General lifestyle	Exercise	Diet	Rest
Depression	-0.29**	-0.29**	-0.14	-0.27**
Anxiety	-0.33**	-0.25	-0.15	-0.32**
Anger	-0.23	-0.15	-0.09	-0.27**
Emotional responses	-0.42**	-0.30**	-0.16	-0.30**
Seclusion	-0.37**	-0.37**	-0.19	-0.31**
Physical fatigue	-0.38**	-0.27**	-0.23	-0.32**
Hyperactivity of the autonomous nervous system	-0.26**	-0.15	-0.06	-0.32**

Note: \*indicates  $p < 0.05$ , while \*\*indicates  $p < 0.01$ .

**Table 5.** Correlations between each category of stress and lifestyle habits in females.

	General lifestyle	Exercise	Diet	Rest
Depression	-0.27**	-0.17	-0.21**	-0.17
Anxiety	-0.26**	-0.17	-0.09	-0.23**
Anger	-0.23**	-0.19**	-0.16	-0.22**
Emotional responses	-0.36**	-0.24**	-0.20**	-0.22**
Seclusion	-0.32**	-0.28**	-0.19**	-0.29**
Physical fatigue	-0.36**	-0.19**	-0.24**	-0.34**
Hyperactivity of the autonomous nervous system	-0.13	-0.17	-0.15	-0.28**

Note: \*indicates  $p < 0.05$ , while \*\*indicates  $p < 0.01$ .

in order, with higher point values indicating a higher level of order. The correlation between total stress points and total general lifestyle points was  $-0.38$  ( $p < 0.01$ ), which is a significant correlation. Since many of the subjects had significant correlations, it can be assumed that increased stress lead to disorders in lifestyle rhythm. Moreover, while there was no clear causal relationship between stress and lifestyle rhythm, proper order of lifestyle rhythm is thought to lead to reduced stress. The human body has a circadian rhythm, which is controlled by its biological clock. This clock controls the rhythms of waking up, going to sleep, body temperature, hormones, etc [15]. Cortisol (cortical hormones) are secreted before we wake up in the morning, and responds to stress activities [16]. It is thought that secretion of this hormone is reduced when our lifestyle rhythm has been disturbed, making it more difficult for us to handle stress.

The correlation between total stress points and total exercise points was  $-0.27$  ( $p < 0.01$ ), which is a significant correlation. In other words, this suggests that the more stress there is, the less exercise they do.

The correlation between total stress points and total diet points was  $-0.19$  ( $p < 0.01$ ), which is a significant correlation. In other words, the more stress there is, the more disturbed the eating habits are. It is thought that stress can affect diet by leading to overeating, apastia, or snacking between meals. Moreover, we understand that there is a difference between gender. While there is no significant correlation in males, there is a significant correlation in females. Previous research [8] has shown that there is a tendency for women to be more conscientious of their physical appearance than men. It is thought that being more conscientious of their physical appearance and restricting the volume and types of food consumed are stressful. Moreover, while there is no causal factors between stress and diet, it is thought that eating can reduce stress.

The correlation between total stress points and total diet points was  $-0.36$  ( $p < 0.01$ ), which is a significant correlation. In other words, the results also indicate that the higher the stress level, the less amount of rest. Rest had a higher significant correlation than other subjects, providing evidence that there is a strong connection between rest and stress. Some examples of the relationship between stress and rest include being unable to sleep due to dwelling on stress, such as anxiety, or being unable to rest sufficiently due to wake-up/sleep times not being set, leading to an irregular lifestyle. Therefore, it is thought that stress can lead to sleep disorders, such as insomnia. Previous research [17] cites psychological stress and the inability to cope well with stress as causal factors of insomnia.

Overall, there is a strong significant correlation in males between depression and exercise. This indicates that there is a mutual relationship between depression and exercise. It is thought that increasing exercise habits improve sleep quality and that exercise can reduce depression. There is a major significant difference in females in the relationship between depression and diet. This indicates that there is a mutual relationship between depression and diet. Psychological instability due to a high tendency towards depression is thought to lead to

disturbances in diet.

There is a strong significant correlation between anxiety and rest in all categories: overall, males, and females. This indicates that there is a mutual relationship between anxiety and rest. The stress of anxiety in conjunction with the inability to sleep sufficiently due to dwelling on distress or worries before bedtime is thought to hinder rest. Moreover, it is thought that reducing anxiety allows individuals to achieve sufficient rest.

There is a strong significant correlation between anger and rest in all categories: overall, males, and females. This indicates that there is a mutual relationship between anger and rest. It is reported that reactions to fear and stress increase when lacking sleep, which also suppresses the activity of the cerebral cortex, which balances the emotions, making the functions of the brain more susceptible to stress [18]. This means that it is thought that there is a correlation between sleep deprivation and irritation or anger.

There is a strong significant correlation between emotional responses and rest in all categories: overall, males, and females. This indicates that there is a mutual relationship between emotional responses and exercise. It is thought that exercise, sports matches, and the like often create emotional responses, such as excitement or impulses. Moreover, with regards to the correlation between emotion responses and exercise, there was a difference between males and females, with a stronger correlation in males. Since men had a higher average score for exercise than women, it is thought that more men have a habit of exercising and that they are in circumstances in which they more easily perceive the stress of emotional reactions.

There is a strong significant correlation between seclusion and exercise and between seclusion and rest in all categories: overall, males, and females. This indicates that there is a mutual relationship between seclusion and exercise and between seclusion and rest. The trend towards seclusion is thought to be accompanied by a feeling to avoid contact with others, which make people become nocturnal. Therefore, they will have less exercise habits and insufficient sleep, which is thought to lead to disturbances of the circadian rhythm.

There is a strong significant correlation between physical fatigue and rest in all categories: overall, males, and females. This indicates that there is a mutual relationship between physical fatigue and rest. Physical fatigue such as languor and weakness of the body can be remedied through rest and it is thought that light exercise is also effective for improving blood circulation.

There is a strong significant correlation between hyperactivity of the autonomous nervous system and rest in all categories: overall, males, and females. This indicates that there is a mutual relationship between hyperactivity of the autonomous nervous system and rest. It is thought that hyperactivity of the sympathetic nerves of the autonomous nervous system can cause illnesses such as hypertension or hyperglycemia, with the largest contributor thereto being rest.

## 5. Conclusions

This indicates that the more stress there is, the more disturbed the lifestyle habit is. There are many younger students who face psychogenic issues and require support from school nurses. Some examples of ways in which school nurses can support students include creating an environment in which it is easier for younger students to talk to school nurses, creating support plans for each student, conducting health consultation activities in coordination with teachers and the relevant organizations, and ascertaining information regarding the circumstances of younger students through daily observations or through questionnaire surveys. At the same time, it is thought necessary to provide both individualized and general health guidance, have active committee activities for planning, etc. of health meetings, and proactively participate in learning more about health.

The contents of support activities are based on themes concerning diet, exercise, rest, and mental health (stress). Among these themes, it was revealed that the deepest connection lies between stress and rest. In recent years, survey results have revealed that children are going to bed at a later time than before, so it is thought that sleep guidance is needed. The lifestyle habits of children are affected by the lifestyle habits of their families, so getting the cooperation of their parents or guardians is necessary. School nurses, who are able to ascertain the health of children, providing guidance about lifestyle habits, providing better support in accordance with the children's circumstances would become possible. By building better lifestyle habits through this support, people would be able to cope with stress better, leading to better balance in mental and physical health.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- [1] Olweus, D. (2013) School Bullying: Development and Some Important Challenges. *Annual Review of Clinical Psychology*, **9**, 751-780. <https://doi.org/10.1146/annurev-clinpsy-050212-185516>
- [2] Zaborskis, A., Ilionsky, G., Tesler, R. and Heinz, A. (2019) The Association between Cyberbullying, School Bullying, and Suicidality among Adolescents. *Crisis*, **40**, 100-114. <https://doi.org/10.1027/0227-5910/a000536>
- [3] Armitage, R. (2021) Bullying in Children: Impact on Child Health. *BMJ Paediatr Open*, **5**, 1-8. <https://doi.org/10.1136/bmjpo-2020-000939>
- [4] Mark, L., Värnik, A. and Sisask, M. (2019) Who Suffers Most from Being Involved in Bullying-Bully, Victim, or Bully-Victim? *Journal of School Health*, **89**, 136-144. <https://doi.org/10.1111/josh.12720>
- [5] Lin, L.Y., Chien, Y.N., Chen, Y.H., Wu, C.Y. and Chiou, H.Y. (2022) Bullying Experiences, Depression, and the Moderating Role of Resilience among Adolescents. *Front Public Health*, **10**, 1-11. <https://doi.org/10.3389/fpubh.2022.872100>
- [6] Plexousakis, S.S., Kourkoutas, E., Giovazolias, T., Chatira, K. and Nikolopoulos, D.



- (2019) School Bullying and Post-Traumatic Stress Disorder Symptoms: The Role of Parental Bonding. *Front Public Health*, **7**, 1-15.  
<https://doi.org/10.3389/fpubh.2019.00075>
- [7] Schultchen, D., Reichenberger, J., Mittl, T., Weh, T.R.M., Smyth, J.M., Blechert, J. and Pollatos, O. (2019) Bidirectional Relationship of Stress and Affect with Physical Activity and Healthy Eating. *British Journal of Health Psychology*, **24**, 315-333.  
<https://doi.org/10.1111/bjhp.12355>
- [8] Torres, S.J. and Nowson, C.A. (2007) Relationship between Stress, Eating Behavior, and Obesity. *Nutrition*, **23**, 887-894. <https://doi.org/10.1016/j.nut.2007.08.008>
- [9] Kohyama, J. (2016) Good Daily Habits during the Early Stages of Life Determine Success throughout Life. *Sleep Science*, **9**, 153-157.  
<https://doi.org/10.1016/j.slsci.2016.09.002>
- [10] Hackett, R.A. and Steptoe, A. (2016) Psychosocial Factors in Diabetes and Cardiovascular Risk. *Current Cardiology Reports*, **18**, Article No. 95.  
<https://doi.org/10.1007/s11886-016-0771-4>
- [11] Cebioglu, M., Schild, H.H. and Golubnitschaja, O. (2008) Diabetes Mellitus as a Risk Factor for Cancer: Stress or Viral Etiology? *Infectious Disorders—Drug Targets*, **8**, 76-87. <https://doi.org/10.2174/187152608784746501>
- [12] Ozeki, Y. (1993) Refining the Stress Self-Rating Scale for University Students: Toward a Transactional Analysis. *The Annual of the Graduate School of Comparative Studies of International Cultures and Societies*, **1**, 95-114. (In Japanese)
- [13] Tokunaga, M., Okabe, H., Kanazaki, R. and Tatano, H. (1984) A Study on the Diagnostic Indexes for Health and It's Related Factors. *Journal of Health Science*, **6**, 155-164. (In Japanese)
- [14] Omasu, F., Komori, A., Higashi, K. and Yoshimura, H. (2021) Impact of Smoking on Lifestyle and Vitality in College Students. *Open Journal of Preventive Medicine*, **11**, 199-210. <https://doi.org/10.4236/ojpm.2021.115016>
- [15] Yamanaka, Y. (2016) Living Environment and Circadian Clock in Humans. *Japanese Journal of Biometeorology*, **53**, 69-81. (In Japanese)
- [16] van de Werken, M., Booi, S.H., van der Zwan, J.E., Simons, M.J., Gordijn, M.C. and Beersma, D.G. (2014) The Biological Clock Modulates the Human Cortisol Response in a Multiplicative Fashion. *Chronobiology International*, **31**, 572-580.  
<https://doi.org/10.3109/07420528.2013.868472>
- [17] Amaral, A.P., Soares, M.J., Pinto, A.M., et al. (2018) Sleep Difficulties in College Students: The Role of Stress, Affect and Cognitive Processes. *Psychiatry Research*, **260**, 331-337. <https://doi.org/10.1016/j.psychres.2017.11.072>
- [18] Motomura, Y., Kitamura, S., Oba, K., Terasawa, Y., et al. (2013) Sleep Debt Elicits Negative Emotional Reaction through Diminished Amygdala-Anterior Cingulate Functional Connectivity. *PLOS ONE*, **8**, e56578.  
<https://doi.org/10.1371/annotation/5970ff3-0a1c-4056-9396-408d76165c4d>