

# Overview of Lifestyle and Anthropometry of Students of the Faculty of Medicine Airlangga University During COVID-19 Pandemic

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## Abstract

**Background:** The COVID-19 pandemic has spread worldwide, forcing governments to implement quarantines as a preventive measure against the spread of the virus. Quarantine causes changes in lifestyle and anthropometry status among communities.

**Objective:** To describe the lifestyle and anthropometric status of medical students batch 2018 FM UA during the pandemic. Methods: This was a descriptive study using online questionnaires from September 2020 to February 2021.

**Results:** There were variations in students' anthropometry. Students' average height is 161.110 cm, the average weight is 60.308 cm, the average body mass index is 23.193 cm, the average upper arm circumference is 27.846 cm, and the average abdominal circumference is 79.621 cm. Furthermore, 145 respondents (81.9%) stated that they experienced changes in their lifestyle during the pandemic. A total of 89 respondents (50.3%) continued to exercise and the other 88 respondents (49.7%) did not. Regarding the sleep pattern, 108 respondents (61%) had quite good sleep quality and 50 respondents (28.2%) had quite poor sleep quality. For the food consumption pattern, 46 respondents (26%) ate more sweet foods. Furthermore, 156 respondents (88.1%) did sedentary activities, with 77 respondents (43.5%) doing sedentary behavior for more than 6 hours a day.

**Conclusion:** During the COVID-19 pandemic, the anthropometric status of medical students batch 2018 FMUA varied; and tend to maintain their physical activity, have quite good sleep quality, prefer eating sweet foods, and do a sedentary behavior for a longer duration

**Keywords:** COVID-19 pandemic, quarantine, lifestyle, anthropometry.

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## Introduction

Coronavirus Disease 2019 (COVID-19) is an acute respiratory syndrome due to SARS-CoV-2 infection. Its first transmission was suspected from animals at the Huanan seafood market, Wuhan, China in December 2019. Eventually, this outbreak continuously spreads among communities throughout the world through human-human transmission and quickly progresses to involved worldwide populations.<sup>16</sup>

On March 11, 2020, the World Health Organization (WHO) declared that COVID-19 became a pandemic after resulting in 1,776,867 cases and 111,828 confirmed deaths.<sup>1</sup> In Indonesia, as of June 23, 2020, a total of 47,896 cases and 2,535 confirmed deaths of COVID-19 have been reported by the National COVID-19 Task Force.<sup>11</sup>

As a measure toward this pandemic, all countries in the world, including Indonesia, have implemented a policy to restrict physical interaction and mobility through quarantine periods to break the chain of COVID-19 transmission.<sup>6</sup> Prolongation of this quarantine, however, can affect the anthropometry status and lifestyle of the society, including college students, which is in line with diverse responses, either positive or negative responses.<sup>5</sup> Following this public health concern, this study aimed to find out the description of the lifestyle and anthropometry status of medical students at the Faculty of Medicine, Universitas Airlangga, during the COVID-19 pandemic.

## Materials and Methods

This was a descriptive study with a cross-sectional design carried out by using online questionnaires delivered to medical students batch 2018, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia. This study was conducted from September 2020 - February 2021. The questionnaire contained a set of questions assessing general characteristics of the research subjects, anthropometric data of respondents (height, weight, arm circumference, abdominal circumference), and lifestyle changes during this pandemic. A total of 29 questions were adapted from the prior study by Renzo et al. (2020). Data were obtained from subjects after gaining their consent and then served in the form of narratives, tables, graphs, or any other representative illustrations. This research has been reviewed and approved by the Health Research Ethics Committee,

Faculty of Medicine, Airlangga University, Surabaya (No. 111/EC/KEPK/FKUA/2021).

## Results

A total of 177 medical students batch 2018 at the Faculty of Medicine, Universitas Airlangga met the criteria of research respondents. Anthropometric status of interest involved height, weight, body mass index (BMI), upper arm circumference (UAC), and abdominal circumference. The average of respondents' height was 161.1 cm. The height ranged from 131 - 182 cm, with the most observed student height was 155 cm (14.1%). The average body weight was 60.3 kg and ranged from 31.4 kg - 118 kg. Bodyweight of 48 kg and 56 kg was the most frequently reported weight (5.6%). Regarding BMI, the average BMI of students was 23.1 and varied from 13.2 - 52.4 BMI units. Additionally, BMI 19.5 was the most prevalent observed BMI (2.3%). According to the Ministry of Health of Indonesia classification, as many as 64.4% of respondents are categorized as had a normal BMI, while 2.8% of students were thin, and 15.7% of students were overweight. The average student UAC was 27.85 cm, varying from 14 cm - 60 cm. UAC 30 cm was the most commonly observed UAC (11.9% of students). Meanwhile, the average waist circumference was 79.6 cm with data distribution ranged from 32 cm - 160 cm. About 9.6% of students had a waist circumference of 80 cm. Furthermore, referring to the Ministry of Health Criteria, 45.5% of respondents were obese (Diagram 1).

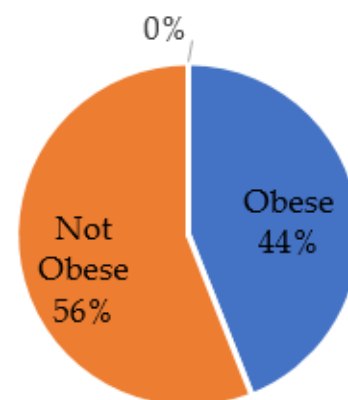


Diagram 1: Student obesity status at the Faculty of Medicine Universitas Airlangga based on Abdominal Circumference

Analysis of physical activity patterns found that 40.68% of respondents admitted did not perform exercise during the pandemic. However, the rest of the respondents declared that they still exercised

although its duration varied among students. The further data is presented in Diagram 2.

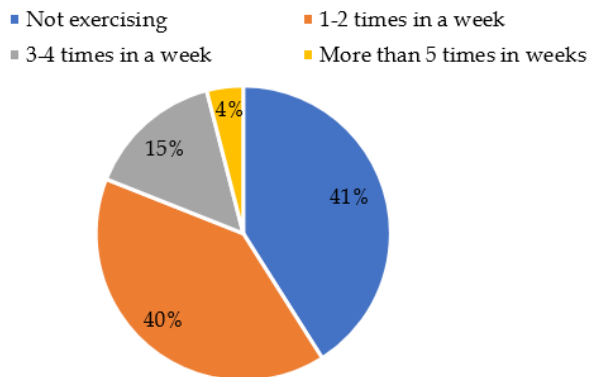


Diagram 2: The proportion of students exercised during the COVID-19 Pandemic

In the domain of sleep patterns, about 61% of students claimed to have quite good sleep quality

and 8.5% of students said to have very good sleep quality. Meanwhile, about 28.2% of respondents admitted to having quite poor sleep quality and 2.3% of respondents declared having poor sleep quality.

Regarding the pattern of frequently consumed foods, most of the respondents admitted that they ate more sweet foods. Conversely, referring to a pattern of rarely consumed food, respondents stated that they ate fewer vegetables. A detailed description of the diet is presented in Diagram 3.

Furthermore, concerning sedentary behavior, 88.1% of respondents stated that they watched TV/played computer/played video games/similar activities more frequently during the pandemic. Meanwhile, 43.5% of respondents even spent more than 6 hours a day doing these sedentary activities. The details are presented in Graph 1.

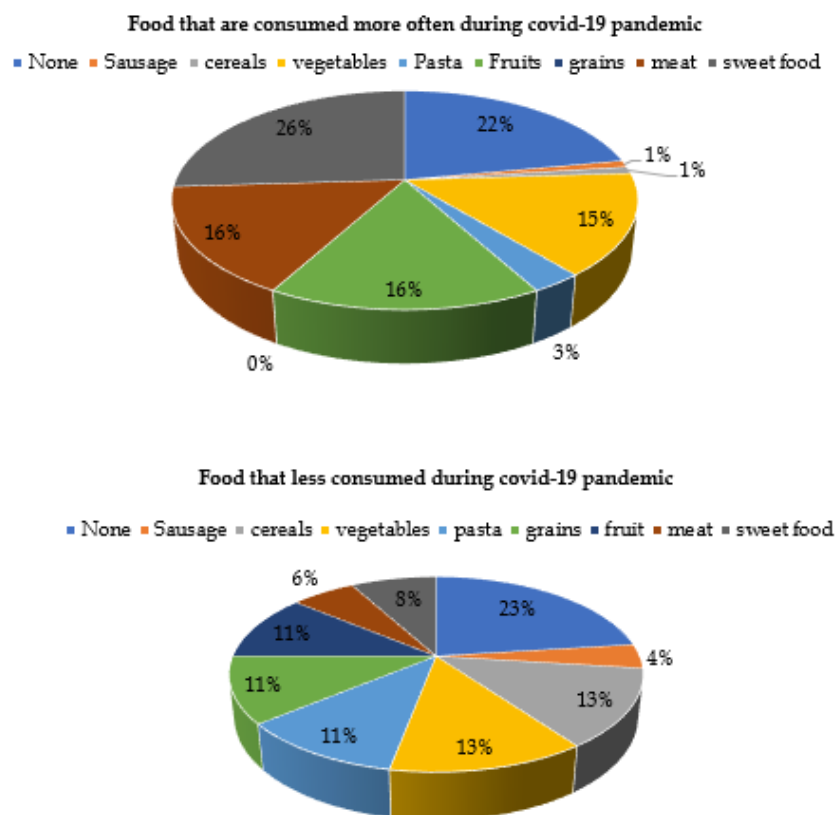


Diagram 3: Commonly and less commonly consumed foods by students during the pandemic

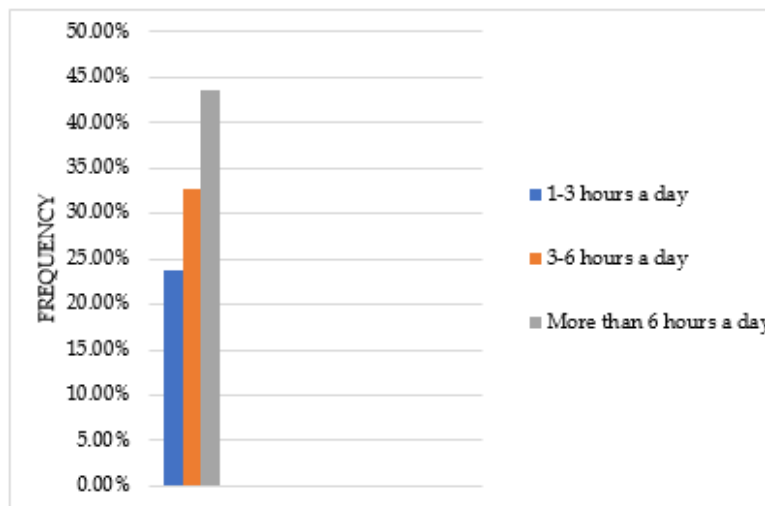
### Discussion

Increased stress and depression have been associated with negative impacts on physical activity, nutritional habits, and health status. The high level of depression and anxiety might lead individuals to

preferentially consume sweeter foods and snacks, and probably reduce fruits and vegetable intakes. Unhealthy foods, such as candies, are associated with increased body weight and BMI.<sup>12</sup> Lack of physical activity and sedentary behavior (sedentary activity >2 hours) affects body weight, where an individual who

engages in sedentary behavior for more than 2 hours per day will have an increased risk of unhealthy body composition<sup>14</sup>. Another influencing factor of body anthropometry status is sleep patterns. Poor sleep quality due to short sleep duration (<6 hours) is a risk factor for the development of obesity and its complications<sup>2</sup>. The findings of this study found the average body weight of the subjects was 60.31 kg, height was 161.11 cm, and BMI was 23.13 (this BMI was classified as above normal according to WHO but classified as normal according to the Ministry of

Health). The subject's mean waist circumference was 79.62 cm and the subject's mean arm circumference was 27.85 cm. The anthropometric status of subjects tended to be normal, concurring the subjects responded that though the subjects did sedentary behavior with longer duration and consumed sweet foods, most respondents stated that they maintain their routine exercise. In addition, based on the results of the study, respondents had quite good sleep quality.



**Graph 1: Duration of student on Watching TV/Playing Computers/Playing Video Games/Similar Activities During the COVID-19 Pandemic**

Regular physical activity and exercise are deemed to improve physical fitness, help to reduce the risk of various diseases and hold psychological benefits for a better individual condition.<sup>3</sup> Nevertheless, the existence of quarantine has forced individuals to modify their behavior, including their physical activities such as exercise. Nonetheless, Brand et al. (2020) reported that quarantine did not dramatically reduce the frequency of exercise. Instead, it tended to show a positive response among individuals who did not routinely perform an exercise before the quarantine<sup>3</sup>. Brand's work indicated that 44.2% of individuals maintaining their sports activities, other 31.9% individuals even increased their exercise intensity, and only 23.7% individuals stated a decrease in their exercise frequency. This study is in line with the present study in which medical students appeared to experience positive responses regarding physical activity as 89 students (50.3%) said that they continued to exercise during the COVID-19 pandemic. This might occur as an influence of self-efficacy response, an individual's belief that he/she is

capable of acting to achieve a goal, that has a positive effect on mood. Additionally, psychophysiological processes may involve in this phenomenon as performing exercise could lead to changes in hypothalamic-pituitary-adrenal activity, the stress axis, allowing individuals to better in coping with stress.<sup>3</sup>

However, Duncan et al (2020) also found a negative response to physical activity during the quarantine period of the COVID-19 pandemic. This negative response was also shown by study subjects as 88 students (49.7%) did not exercise during the pandemic. The decrease in physical activity during quarantine might be influenced by a fear of being exposed to COVID-19, limited sports facilities and recreational areas closure, as well as work-from-home programs.<sup>22</sup>

Traumatic events as the COVID-19 pandemic could also result in psychological distress and anxiety symptoms which own a negative effect on an individual's sleep quality. Stress, indeed, is a major

trigger of sleep disorders. The level of stress exposure that disrupts sleep and the subsequent sleeping difficulty is referred to a sleep reactivity.<sup>9,10,13</sup> However, each individual could show a different response.<sup>13</sup> As in this study, the respondent's responses to sleep patterns were varied. This study found that 28.2% of respondents claimed to have quite poor sleep quality and 2.3% of respondents even had poor sleep quality. This might be a consequence of increased stress perceived during quarantine, particularly for limited space to perform dynamic activity for a long duration. Therefore, quarantine policy could predispose to sleep pattern disturbances and insomnia through the pathopsychological mechanisms of the stress. In addition, decreased physical activity and higher use of digital media such as mobile phones before bedtime could also lead to sleep disturbances.<sup>7,20</sup>

However, our study found that the majority of respondents had a quite good sleep quality (61% of respondents). A possible explanation is that individuals with good sleep quality possess a lower sleep reactivity which is linear to lower stress levels. In agreement with stress mechanism, physical activity might also play a role in sleep patterns as this study found that respondents tended to perform physical activities, leading to a good response on sleep quality. Further research, however, is needed regarding good sleep quality during the COVID-19 pandemic.

Furthermore, stress refers to a process involving the perception, judgment, and response to emotional or physiological stimuli. Stress is a challenge to the individual homeostasis process in which the individual has to produce an optimal physiological response to regain the disrupted homeostasis due to stress. One manifestation of disturbed homeostasis comprises the individual eating behavior. Stress leads individuals to consume "calming foods" that contain higher sugar and fat level. Accordingly, these mechanisms suggest that stress can promote disturbed eating patterns.<sup>16,21</sup> This brief explanation is hypothesized to explain the findings of 26% of respondents who stated that they consumed more sweet foods during quarantine. COVID-19 quarantine might result in daily routine disruption, including prolonged sedentary behavior.<sup>22</sup> The total sedentary behavior during quarantine is higher compared to before the pandemic era since people spend more time at home. Medical students also performing school from home which leads them to be in front of

the screen for a longer duration.<sup>22</sup> This is following the results of this study in which 43.5% of respondents favored performing sedentary behavior by staring at the screen for more than 6 hours a day. Regarding stress levels, there was no relationship between sedentary behavior such as watching television or playing computer with stress<sup>19</sup>. For this reason, further research is needed concerning sedentary behavior and stress relationships, especially during the quarantine period of the COVID-19 pandemic.

Nevertheless, this research possesses several limitations. This study was conducted online during the COVID-19 pandemic and researchers could not directly interact with respondents to collect data. Questionnaires containing questions about anthropometry and lifestyle during COVID-19 have not yet existed in Indonesia and posing a challenge in conducting this research.

## Conclusion

During the COVID-19 pandemic, the anthropometric status of medical students batch 2018 Faculty of Medicine, Universitas Airlangga varied; and tend to maintain their physical activity, have quite good sleep quality, prefer eating sweet foods, and do a sedentary behavior for a longer duration.

**Conflict Of Interest:** No conflict of interest

**Ethical Clearance:** This research had an ethical clearance that was approved by Faculty of Medicine Airlangga University No.111/C/KEPK/FKUA/2021.

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## References

1. Abbas AM, Fathy SK, Fawzy AT, Salem AS, Shawky MS. The mutual effects of COVID-19 and obesity. Elsevier Public Health Emergency Collection 2020; doi: 10.1016/j.obmed.2020.100250.
2. Beccuti G, & Pannain, S. Sleep and obesity 2013; doi: 10.1097/MCO.0b013e3283479109.
3. Brand R, Timme S, Nosrat S. When Pandemic Hits: Exercise Frequency and Subjective Well-Being During COVID-19 Pandemic, *frontiers in Psychology* 2020.

4. Daniel JB, Charles FR III, Timothy H M, Susan RB, David JK. The Pittsburgh Sleep Quality Index: A New Instrument for Psychiatric Practice and Research 1988.
5. Ghosh A, Arora B, Gupta R, Anoop S, Misra A. Effects of nationwide lockdown during COVID-19 epidemic on lifestyle and other medical issues of patients with type 2 diabetes in north India. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews* 2020;14(5): 917-920.
6. Gugus Tugas Percepatan Penanganan COVID-19 2020, Empat Strategi Pemerintah Atasi COVID-19, Retrieved: June 24, 2020, from: covid19.go.id
7. Gupta R, Grover S, Basu A, Krishnan V, Tripathi A, Subramanyam A, Nischal A, Hussain A, Mehra A, Ambekar A, Saha G, Mishra KK, Bathla M, Jagiwala M, Manjunatha N, Nebhinani N, Gaur N, Kumar N, Dalal PK, Kumar P, Midha PK, Daga R, Tikka SK, Praharaj SK, Goyal SK, Kanchan S, Sarkar S, Das S, Sarkhel S, Padhy SK, Sahoo S, Rao TSS, Dubey V, Menon V, Chhabra V, Lahan V, Avasthi A. Changes in sleep pattern and sleep quality during COVID-19 Pandemic. *Indian Journal of Psychiatry* 2020; doi: 10.4103/psychiatry.IndianJPsychiatry\_523\_20.
8. Infeksi Emerging, Situasi Terkini Perkembangan Coronavirus Disease (COVID-19) 24 Juni 2020, Retrieved: June 24, 2020, from: covid19.kemkes.go.id
9. Kalmbach DA, Anderson JR, Drake CL. The impact of stress on sleep: Pathogenic sleep reactivity as a vulnerability to insomnia and circadian disorders, *Journal of Sleep Research* 2018.
10. Kalmbach, DA, Cuamatzi-Castelan AS, Tonnu CV, Tran KM, Anderson JR, Roth T, Drake, CL. Hyperarousal and sleep reactivity in insomnia: current insight, Dovepress Nature and Science of Sleep 2018; 10:193-201.
11. Kementerian Kesehatan Republik Indonesia 2019, Tabel Batas Ambang indeks Massa tubuh (IMT), Retrieved: February 10, 2021, from: p2ptm.kemkes.go.id
12. Kriaucioniene V, Bagdonaviciene L, Rodríguez-Pérez, Petkeviciene J. Association between Changes in Health Behaviours and Body Weight during the COVID-19 Quarantine in Lithuania: The Lithuanian COVIDiet Study 2020.
13. Mandelkorn U, Genzer S, Choshen-Hillel C, Reiter J, Cruz, MM, Hochner H, Keirandish-Gozal L, Gozal D, Gileles-Hillel A. Escalation of sleep disturbances amid the COVID-19 pandemic: a cross-sectional international study, *Journal of Clinical Sleep Medicine* 2021;17(1).
14. Micklesfield LK, Hanson SK, Lobelo F, Cunningham SA, Hartman TJ, Norris SA, Stein AD. Adolescent physical activity, sedentary behavior and sleep in relation to body composition at age 18 years in urban South Africa, Birth-to-Twenty+ Cohort 2021.
15. Renzo L, Di Gualtieri P, Pivari F, Soldati L, Attina A, Cinelli G, Leggeri C, Caparello G, Barrea L, Scerbo F, Esposito E, Lorenzo, AD. Eating habits and lifestyle changes during COVID-19 lockdown: an Italian survey, *Journal of Translation Medicine* 2018;18:229.
16. Renzo L, Di Gualtieri P, Cinelli G, Bigioni G, Soldati L, Attinà A, Bianco FF, Caparello G, Camodeca V, Carrano E, Ferraro S, Giannattasio S, Leggeri C, Rampello T, Presti LL, Tarsitano MG, Lorenzo AD. Psychological Aspects and Eating Habits during COVID-19 Home Confinement: Results of EHLC-COVID-19 Italian Online Survey, *nutrients* 2020; 12(7):2152.
17. Schröder H, Fitó M, Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Lamuela-Raventós R, Ros ES, Fiol M, Lapetra J, Vinyoles E, Gómez-Gracia E, Lahoz, C, Serra-Majem LPX, Ruiz-Gutiérrez V, Covas M. A Short Screener Is Valid for Assessing Mediterranean Diet Adherence among Older Spanish Men and Women, *The Journal Of Nutrition*, 2011; 141(6):1140-1145.
18. Srivastav AK, Sharma N, Samuel A J. Impact of Coronavirus disease-19 (COVID-19) lockdown on physical activity and energy expenditure among physiotherapy professionals and students using web-based open E-survey sent through WhatsApp, Facebook and Instagram messengers 2021; doi: 10.1016/j.cegh.2020.07.003.
19. Teychenne M, Stephens LD, Costigan SA, Olsstad DL, Stubbs B, Turner AI. The association between sedentary behavior and indicators of stress: a systematic review 2019; doi: 100.1186/s12889-019-7717-x.
20. Werneck AO, Silva DR, Malta DC, Lima MG, Souza-Júnior PRB, Azevedo LO, Barros MBA, Szwarcwald CL. The mediation role of sleep quality in the association between the incidence of unhealthy movement behaviors during the COVID-19 quarantine and mental health, *Elsevier Public Health Emergency Collection* 2020;76:10-15.
21. Yau YHC & Potenza MN. Stress and Eating Behaviors, *Minerva Endocrinol* 2014;38(3):255-267.
22. Zheng C, Huang WY, Sheridan S, Sit CH, Chen X, Wong SH. COVID-19 Pandemic Brings a Sedentary Lifestyle in Young Adults: A Cross-Sectional and Longitudinal Study, *International Journal of Environmental Research and Public Health* 2020;17(17).