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Hubungan Body Image dan Aktivitas Fisik dengan Status Gizi Siswi SMA Negeri 2 Surabaya

The Correlation between Body Image and Physical Activity in Female Students of State Senior High School 2 Surabaya (SMA Negeri 2 Surabaya)

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ABSTRAK

Latar Belakang*: Remaja merupakan salah satu fase penting karena merupakan masa transisi menuju dewasa sehingga status gizi pada masa remaja akan menentukan kondisi kesehatan saat dewasa. Pembatasan pelaksanaan kegiatan di luar rumah selama pandemi COVID-19, menyebabkan penurunan aktivitas fisik, peningkatan aktivitas sedentari dan kejadian stress yang salah satunya berawal dari body image negatif. Perubahan aktivitas fisik serta adanya body image negatif khususnya pada remaja putri akan menyebabkan perubahan status gizi dan meningkatkan risiko terjadinya masalah gizi baik masalah gizi lebih maupun gizi kurang.*

Tujuan*: Untuk menganalisis hubungan body image dan aktivitas fisik dengan status gizi siswi SMA Negeri 2 Surabaya.*

Metode*: Desain penelitian berupa studi potong lintang, dengan besar sampel 61 siswi SMA Negeri 2 Surabaya berusia 15—17 tahun yang telah diundi dan diambil menggunakan teknik pengambilan sampel acak sederhana. Instrumen penelitian berupa kuisioner Body Shape Questionnaire (BSQ-16a), International Physical Activity Questionnaire-short form (IPAQ) dan kuisioner data diri, tinggi dan berat badan (self-assesment) yang didesain secara online. Analisis data berupa analisis tabel kontingensi dan uji fisher's exact melalui program IBM SPSS Statistics v23.*

Hasil*: Sebanyak tujuh dari sepuluh siswi (70,5%) memiliki body image negatif; sebagian besar siswi berstatus gizi normal (77%) namun prevalensi status gizi gemuk (14,8%) tergolong tinggi dan tingkat aktivitas fisik yang bervariasi (ringan=32,8, sedang=31,1%, berat=36,1%). Hasil menunjukkan adanya hubungan antara body image (p=0,011) dan aktivitas fisik (p=0,006) dengan status gizi siswi SMA Negeri 2 Surabaya.*

Kesimpulan*: Body image negatif dan aktivitas fisik rendah atau perilaku sedentari berkontribusi pada kejadian overweight dan obesitas pada siswi SMA Negeri 2 Surabaya.*

Kata Kunci*: Status Gizi, Gizi Kurang, Obesitas, Citra Tubuh, Aktivitas Fisik*

ABSTRACT

Background: Adolescence happens to be one of the most important phases in life since it is a transition phase to adulthood so that nutritional status at this phase could define the health status in adulthood. The limitation of outdoor activities during the pandemic has been done as an effort to break the chain of the Covid-19 virus spread causes decline in physical activity, increase in sedentary behavior and stressful events in the form of a negative body image. Changes in physical activity and the presence of a negative body image, especially in adolescent girls, will likely cause changes in nutritional status and increase the risk of nutritional problems in both over-nutrition and under-nutrition.

Objective: To analyze the relationship of body image and physical activity of female students in State Senior High School 2 Surabaya (SMA Negeri 2 Surabaya).

Methods: The study design was a cross-sectional study, with a total sample of 61 female students of SMA Negeri 2 Surabaya, aged 15-17 years who were randomly selected using the simple random sampling method. The study instruments were BSQ-16a, IPAQ-short form, personal data including body height and body weight which were designed online. Data analysis were cross tab analysis and the fisher's exact test using IBM SPSS Statistics v23.

Results: There were seven out of ten (70.5%) students that had a negative body image; most of them had normal nutritional status (77%), but the prevalence of overweight (14.8%) was high and the levels of physical activity varied (light=32.8, moderate=31.1%, strenuous=36.1%). In addition, there was a correlation between body image (p = 0.011) and physical activity (p = 0.006) with nutritional status of female students in SMA Negeri 2 Surabaya.

Conclusion: Negative body image and lower physical activity or sedentary behavior contributed to overweight and obesity in female students of State Senior High School 2 Surabaya (SMA negeri 2 Surabaya).

Keywords: Nutritional Status, Under-Nutrition, Obesity, Body Image, Physical Activity

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INTRODUCTION

Nutritional problems, especially over-nutrition and under-nutrition in adolescents, still occur in Indonesia, especially in East Java[1]. According to Riskesdas 2018, the prevalence of underweight and overweight is still relatively high in adolescents in East Java compared to the national average. From 2013 to 2018, although the prevalence of underweight nutritional status decreased from 7.5% to 6.7% in adolescents aged 16-18 years, the prevalence of overweight increased by 4.3% and obesity increased by 2.4 %. Adolescence is a developmental transition from children to adults. The transition involves various changes biologically, cognitively and socio-emotionally. Some of the biological changes encountered in adolescence include: accumulation of bone mass, increase in body mass and height, and changes in body composition including fat mass and muscle mass[2].

During adolescence, there is also development of identity such as awareness of sexuality, including ethics, self-esteem, moral value systems, and perceptions of the body or body image[3]. Dramatic changes in body shape, both grossly and visually, as well as the development of self-awareness lead to the development of negative body image and eating disorders, especially among adolescent girls[2]. The process of growth and development in adolescence occur rapidly, causing an increase in the need for energy and nutrients. In several previous studies which have been carried out by Deshmusk and Kulkarni[4], and Bimantara et al.[5] it has been found that there is a correlation between body image and nutritional status, especially in adolescents. If the body image is bad or commonly referred to as negative body image occurs, there will be nutritional problems[2].

Large-Scale Social Restrictions (PSBB) is one of the efforts to break the spread of the COVID-19 virus, which causes all activities that involve many people meeting in one place are prohibited, one of which is school activities which are now carried out online via the internet. This online school activity contributes to reducing physical activity since students do not need to go to school. Furthermore, extracurricular activities that involve physical activities such as basketball, dance, volleyball and martial arts also do not work as expected and actually increase sedentary activities.

Nutritional problems in adolescents also occur due to high sedentary activity and low physical activity, which before the Covid-19 pandemic have already become a lifestyle for children and adolescents[2,6,7]. This lifestyle has a relationship with the nutritional status of adolescents[8]. This unhealthy lifestyle is followed by a lack of awareness of adolescents about health, causing most teenagers to overeat that leads to obesity[2]. This teenage lifestyle becomes worse due to the Covid-19 pandemic which makes adolescents feel less happy[9] and often skip meals so that it also contributes to improving the nutritional status of underweight and negative body image among the adolescents[10].

Adolescent nutritional status is measured based on the BMI/U index[11]. Past studies have found dissatisfaction of body image in teenagers[5,12–15]. For this reason, this study aims to analyze the correlation between body image and physical activity with the nutritional status of students of State Senior High School 2 Surabaya (SMA Negeri 2 Surabaya), especially during the Covid-19 pandemic.

METHODS

This research was an analytic observational study with a cross-sectional design. The research population were 197 people and were all students of class XI SMA Negeri 2 Surabaya for the 2020/2021 academic year. The sample size obtained by the binomunal formula[16] were 61 students. The simple random sampling was used in choosing the sample. The primary data collection of this study was carried out by distributing form links online to one by one respondent via WhatsApp. Next, the respondents were asked to fill in their personal data including height, weight, International Physical Activity Questionnaire (IPAQ) and Body Shape Questionnaire (BSQ). All data were collected based on self–assessment, and a video tutorial for measuring height and weight independently, which was in accordance with the rules of anthropometric measurements. Furthermore, the validity of the data was also monitored by researchers who were assisted by enumerators.

Data validation was carried out by sending photos of weight and height measurements by the respondents to the researchers. This study had limitations in measuring the variable of height which varies independently measured with a measuring tape, microtoise and ruler according to what was owned by the respondent, and the variable of weight which was measured using a digital weight scale and bathroom scale with an accuracy of 1 kg and 0.1 kg. The limitations of the study, especially on the weight variable, were overcome by rounding the numbers so that they were commensurate with weight measurements with an accuracy of 1 kg.

The independent variables were body image and physical activity, while the dependent variable was nutritional status as measured by BMI/U (body mass index according to age) parameters. The body image variable was measured by the BSQ-16a form in which there were a total of 16 subjective questions regarding the respondents' own body perception during the last 4 weeks. The physical activity variable was measured using

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an IPAQ form consisting of 9 questions about daily activities for the last 7 days. The validity and reliability of the BSQ-16a and IPAQ had been carried out in Indonesia[17,18]. The Body image was measured based on the respondents' perception of their body shape. With the BSQ-16a questionnaire, the category of body image was divided into 2, namely positive (score < 38) and negative (score ≥ 38). The physical activity was obtained from the METs-mins/week score obtained from the sum of the METs scores (metabolic equivalents)-mins of walking activity, strenuous physical activity and moderate physical activity. The light activity category was < 600METs-mins/week, strenuous activity had a score of > 1500 METs-mins/week, while moderate activity was 600 – 1500 METs-mins/week. The data were then analyzed using cross tabulation with the fisher's exact test via the SPSS Statistics v23 of IBM software.

The limitations of this study, apart from the limitations of measuring weight and height, also lay in the lack of measuring other variables related to nutritional status, such as nutrient intake and stress levels. This research had a certificate of ethical conduct which was approved by the Chairman of KEPK FKM UA no. 91/EA/KEPK/2020 dated August 28, 2020 which is valid until August 28, 2021. The data collection was carried out from October 2020 to November 2020 during the Covid-19 pandemic era.

RESULTS AND DISCUSSION

In Table 1 there are 80.3% of respondents aged 16 years, with an age distribution of 15-17 years. This shows that the respondent is in middle adolescence[19]. Similar research related to body image on adolescent girls carried out by Bimantara *et al*[5], also found a similar age range between 15 to 18 years in female students of class XI at SMA Negeri 9 Surabaya. According to Piaget's theory of cognitive development[20,21], children aged 12-15 years have entered the stage of development of formal operations which means that apart from experiencing physical changes and maturation of reproductive cells, children begin to experience social changes in the way they think and process information.

Table 1. Distribution of Respondent Individuality Data

Category	n	(%)
Age (year)		
15	4	6.6
16	49	80.3
17	8	13,1
Department		
NATURAL SCIENCE (IPA)	45	73.8
SOCIAL SCIENCE (IPS)	16	26.2
Body Image		
Negative	43	70.5
Positive	18	29.5
Physical Activity Level		
Light	20	32.8
Moderate	19	31.1
Strenuous	22	36.1
Nutritional status		
Underweight	4	6.6
Normal	47	77
Overweight	9	14.8
Obese	1	1.6

Table 2. Cross tabulation *Body Image* and Respondent Department

Department	Body Image				*p-value*
	Negative		Positive		
	n	%	N	%	
NATURAL SCIENCE (IPA)	30	66.6	15	33.3	.272
SOCIAL SCIENCE (IPS)	13	81.25	3	18.75	

Table 1 shows that most of the respondents have normal nutritional status, but still experience problems with overweight nutritional status which is in line with the results of study conducted by Iftita and Adriani[22], and Bimantara et al[5]. The majority of respondents had normal nutritional status, but 14.8% were overweight, 1.6% were obese and 6.6% were underweight. Respondents with normal nutritional status were the largest which was similar to the prevalence of normal nutritional status in adolescents aged 16-18 years in East Java province and close to the national average according to Riskesdas 2018[1]. There were only a few respondents with overweight nutritional status, however, the figure was higher than the prevalence of overweight nutritional

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status in adolescents aged 16-18 years in East Java province and much higher than the national average according to the 2018 Riskesdas results.

Table 1 also showed that 70.5% of the respondents of class XI SMA Negeri 2 Surabaya experience negative body image. Table 2 showed that students majoring in Social Sciences proportionally tend to experience more negative body image compared to those majoring in Natural Science. This finding was in line with the study carried out by Meygitasari[23] who found that Social Science students tended to experience more negative body image. However, judging from the results of the chi-square test, the p value showed no significant relationship between majors/departments and body image.

Perception of body image referred to an individual's expectations regarding his own body size and shape[24]. If expectations did not match the real condition of the individual's body, then this condition was considered negative body image[25]. For example, a student perceived herself to be overweight even though she was in an ideal nutritional status. Kurniawan et al.[26] found a similar case that 78.6% of adolescent girls had negative body image. This was also similar to the study conducted by Wardani and Hastuti[17] who found that 88.4% of adolescent girls had negative body image. The difference between both studies was in the adolescent phase. Most of respondents in the study carried out by Kurniawan[26] were in the middle adolescence phase, while in study conducted by Wardani and Hastuti[17], most of respondents are in the late adolescence phase. Even so, the results of both studies still represented those teenage girls tend to have negative body image.

Physical activity was defined as any form of bodily movement, including walking, cycling, exercising, travelling and playing, and can be done at any level of skill and for the entertainment of anyone[27]. According to WHO (2020), regular physical activity can prevent degenerative diseases such as type 2 Diabetes Mellitus (DM), cardiovascular diseases such as coronary heart disease (CHD) and several types of cancer, such as breast cancer[28], lung cancer[29], colon cancer[30], and ovarian cancer[31]. Unfortunately, WHO also states that at least four out of five teenagers in the world are not physically active[27].

Based on table 1, physical activity varied and was relatively balanced at all levels, even though the level of strenuous activity is the most common. The level of strenuous physical activity did not always mean that the respondents do the type of strenuous activity such as lifting weights and other high-intensity sports[32]. It could mean that there were many of them who did a series of moderate physical activities[33], such as sweeping and mopping the floor, and washing dishes and clothes repeatedly every week. Other examples of moderate activity that students did was gardening, dancing and aerobics[32]. The results showed that most of the students were physically active. It was in line with the results which indicated that most of the respondents wanted to do sports or increase physical activity in order to achieve the ideal body shape. This result also showed that dissatisfaction with body shape does not always have a negative impact[14] since a person can be motivated to maintain regular physical activity.

Table 3. Contingency Table *Body Image* with the Nutritional Status of Respondents

Body Image	Nutritional status								Total		*p-value*
	Underweight		Normal		Overweight		Obese				
	n	%	N	%	n	%	n	%	n	%	
Negative	1	1.6	32	52	9	15	1	1.6	43	70.5	.011
Positive	3	4.9	15	25	0	0	0	0	18	29.5	

The calculations of cross tabulation and Fisher's exact test values in Table 3 show that body image was significantly related to nutritional status. Female students who have overweight and obese nutritional status tend to experience negative body image. The results from Table 3 indicated that the majority of respondents are not happy with their body shape, even though they already have an ideal body weight. This finding was in accordance with what was written by Brown[2] that most adolescent girls who are not included in the overweight category, perceives themselves as overweight. Negative body image also occurred in underweight adolescents, which was in line with the research of Jannah and Muniroh[34] who discovered that the negative body image on adolescent girls who engage in modelling activities. Even though they are already underweight, some of them still consider themselves overweight. This phenomenon may be exacerbated by increased anxiety during the Covid-19 pandemic[35], when the students tend to think negatively as a result of the Large-Scale Social Restriction (PSBB) policy.

The results of this study were in line with the study conducted by Serly et al.[8] and treasure et al.[36] who found similar results between physical activity and nutritional status in adolescent girls. Physical activity is one of many determinants of a person's nutritional

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status. Physical inactivity and high sedentary behavior were risk factors for obesity[37]. Obesity itself can increase the risk of various types of degenerative diseases or non-communicable diseases such as type 2 diabetes mellitus (DM), coronary heart disease[38] as well as some types of cancer such as breast cancer[28], lung cancer[29], colon cancer[30], and ovarian cancer[31]. Physical activity and a balanced diet can support normal nutritional status[2] . Diet can indicate nutrient intake as one of the factors that are directly related to nutritional status[2,22]. little physical activity, as well as excessive eating patterns, will contribute to energy storage in the body in the form of fat in adipose tissue that can cause overweight and even obesity.[13,32,36].

Table 4. Table of Physical Activity Contingency with the Nutritional Status of Respondents

Physical Activity	Nutritional status								Total		*p-value*
	Underweight		Normal		Overweight		Obese				
	N	%	N	%	n	%	n	%	n	%	
Light	0	0	12	20	7	12	1	1.6	20	33	0.006
Moderate	3	4.9	16	26	0	0	0	0	19	31	
Strenuous	1	1.6	19	31	2	3.3	0	0	22	36	

Based on table 4, it can be seen that the physical activity has a significant correlation with the nutritional status of the female students. Female students who have light physical activity levels tend to have overweight and obese nutritional status, while those who have moderate and strenuous activity levels tend to have underweight and normal nutritional status. This is in accordance with previous studies[13,37] who found that adolescents with overweight and obese nutritional status tended to experience an increase in sedentary activity or a decrease in physical activity, which in this case is the increase in light physical activity. On the other hand, adolescents with normal and underweight nutritional status tend to do higher physical activity or have more moderate and strenuous levels of physical activity.

Since the Covid-19 outbreak, self-isolation as an effort to limit physical interaction has been carried out in order to break the chain of spread of the virus. Self-isolation is considered effective in reducing the spread of the virus[39], but at the same time increase anxiety during the pandemic[40] which is also associated with decreased mental health status that may increase symptoms of stress and depression during the pandemic[41,42]. Meanwhile, physical activity was found to be negatively correlated with stress levels[43]. Those who engage in regular light and moderate activities for at least 30 minutes a day or strenuous physical activity for at least 15 minutes a day have a lower risk of experiencing symptoms of stress or depression, while those who have sedentary behavior are more likely to experience symptoms of depression[44].

The results and discussion of this article have fulfilled its purpose in analyzing the relationship between variables so that it can be used as the latest reference for similar or further research. However, it cannot be denied that there are several shortcomings including: online data collection can increase bias, especially in intake data collection which are worried to be underreporting by respondents; confounding factors that may occur during physical activity data collection due to the possibility of overestimating or excessive reporting in answering the IPAQ for the majority of respondents; and instrument for taking weight data that varies on the accuracy of weight scales (bathroom scale and digital scale) which causes confusion in the nutritional status variable, even though data validation has been carried out.

CONCLUSION

Negative body image and low physical activity or sedentary behavior contribute to overweight and obesity in students of SMA Negeri 2 Surabaya. Students who have achieved normal nutritional status are expected to always maintain a proper diet in order to avoid the risk of being underweight, even though their body weight is already ideal. For students whose nutritional status is overweight and obese are expected to increase their physical activity in order to achieve normal nutritional status. All students of SMA Negeri 2 Surabaya are expected to apply a healthy lifestyle according to balanced nutrition guidelines and balancing the amount of nutrient intake with the level of physical activity. In addition, other researchers are expected to conduct further research with different methods, for example with experimental methods so that they can explain causality relationships between the dependent and independent variables.

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REFERENCES

1. Balitbangkes RI. *Hasil utama riskesdas 2018*. (Kemenkes RI, 2018).
2. Brown, J. E. *Nutrition Through the Life Cycle*.

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(Wadsworth Publishing, 2016). doi:10.1039/9781847559463.

3. Santrock, J. & Steinberg, L. *Adolescence*. (McGraw-Hill Humanities/Social Sciences/Languages, 2013).
4. Deshmukh, V. R. & Kulkarni, A. A. Body image and its relation with body mass index among Indian adolescents. *Indian Pediatr.* **54**, 1025–1028 (2017).
5. Bimantara, M. D., Adriani, M. & Suminar, D. R. Hubungan Citra Tubuh dengan Status Gizi pada Siswi di SMA Negeri 9 Surabaya. *Amerta Nutr.* **3**, 85–88 (2019).
6. Lobstein, T. *et al.* Child and adolescent obesity: Part of a bigger picture. *The Lancet* (2015) doi:10.1016/S0140-6736(14)61746-3.
7. Ramires, V. V. *et al.* Physical activity throughout adolescence and body composition at 18 years : 1993 Pelotas (Brazil) birth cohort study. *Int. J. Behav. Nutr. Phys. Act.* **13**, (2016).
8. Serly, V., Sofian, A. & Ernalia, Y. Hubungan Body Image , Asupan Energi Dan Aktivitas Fisik Dengan Status Gizi Pada Mahasiswa Fakultas Kedokteran Universitas Riau Angkatan 2014. *J. Online Mhs. FK* **2**, 1–14 (2015).
9. Munasinghe, S. *et al.* The impact of physical distancing policies during the COVID-19 pandemic on health and well-being among Australian adolescents. *J. Adolesc. Heal.* **67**, 653–661 (2020).
10. Ali, A. M. & Kunugi, H. COVID-19: A pandemic that threatens physical and mental health by promoting physical inactivity. *Sport. Med. Heal. Sci.* **2**, 221–223 (2020).
11. Kementrian Kesehatan, R. I. *Standar antropometri penilaian status gizi anak*. (2010).
12. Waghachavare, V. B., Quraishi, S. R., Dhumale, G. B. & Gore, A. D. A cross-sectional study of correlation of body image anxiety with social phobia and their association with depression in the adolescents from a rural area of Sangli District in India. *Int. J. Prev. Med.* **5**, 1626 (2014).
13. Damayanti, A. E. Hubungan Citra Tubuh, Aktivitas Fisik, dan Pengetahuan Gizi Seimbang dengan Status Gizi Remaja Putri. (Skripsi. Universitas Airlangga, 2016).
14. Wati, D. K. & Sumarmi, S. Body Image Among Overweight and Non overweight Adolescent Girls : A Cross Sectional Study. *Amerta Nutr.* **044**, 398–405 (2017).
15. Siwi, A. P. S. S. & Nindya, T. S. Body Image Berhubungan Dengan Indeks Massa Tubuh, Tapi Tidak Dengan Waist To Hip Ratio Pada Vegetarian Putri Di Surabaya. *Media Gizi Indones.* **11**, 113 (2018).
16. Nugroho, R. F. Hubungan Stres Psikososial, Persepsi Bentuk Tubuh, Eating Disorder Dan Pola Makan Dengan Status Gizi Pada Remaja Putri. (Skripsi. Universitas Sebelas Maret, 2018).
17. Kusuma Wardani, D. A. & Hastuti, J. Body Dissatisfaction and Perceived Stress Among Obese and Non-Obese University Students in Yogyakarta. *KnE Life Sci.* **4**, 161 (2019).
18. Hastuti, J. Anthropometry and body composition of Indonesian adults: an evaluation of body image, eating behaviours, and physical activity. (Queensland University of Technology, 2013).
19. Santrock, J. *Adolescence*. (McGraw-Hill Humanities/Social Sciences/Languages, 2013).
20. Rasyid, M., Azis, A. A. & Saleh, A. R. Pengembangan Media Pembelajaran Berbasis Multimedia dalam Konsep Sistem Indera pada Siswa Kelas XI SMA. *J. Pendidik. Biol.* **7**, 69–80 (2017).
21. Hanafi, I. & Sumitro, E. A. PERKEMBANGAN KOGNITIF MENURUT JEAN PIAGET DAN IMPLIKASINYA DALAM PEMBELAJARAN. *Alpen J. Pendidik. Dasar* **3**, (2019).
22. Iftita, R. & Adriani, M. Hubungan Gaya Hidup Dengan Status Gizi Remaja. *J. Ilm. Media Gizi Indones.* **9**, 36–41 (2013).
23. Meygitasari, S. PERBEDAAN CITRA TUBUH PADA SISWI JURUSAN IPA DAN IPS SMA NEGERI 3 BEKASI. (Skripsi. Universitas Padjajaran, 2017).
24. Brown, Z. & Tiggemann, M. Attractive celebrity and peer images on Instagram: Effect on women's mood and body image. *Body Image* **19**, 37–43 (2016).
25. Grogan, S. *Body Image: Understanding Body Dissatisfaction in Men, Women and Children*. (Routledge, 2016).
26. Kurniawan, M. Y., Briawan, D. & Caraka, R. E. Relationship of Body Image Perception and Eating Disorders in Adolescents. *J. Gizi Klin. Indones.* **11**, 105–114 (2015).
27. WHO. Physical Activity. https://www.who.int/health-topics/physical-activity#tab=tab_1 (2020).
28. Silva, D. A. S. *et al.* Mortality and years of life lost due to breast cancer attributable to physical inactivity in the Brazilian female population (1990--2015). *Sci. Rep.* **8**, 1–12 (2018).
29. Cannioto, R. *et al.* Lifetime physical inactivity is associated with lung cancer risk and mortality. *Cancer Treat. Res. Commun.* **14**, 37–45 (2018).
30. Eyl, R. E. *et al.* Potential determinants of physical inactivity among long-term colorectal cancer survivors. *J. Cancer Surviv.* **12**, 679–690 (2018).
31. Cannioto, R. *et al.* Chronic recreational physical inactivity and epithelial ovarian cancer risk: evidence from the Ovarian Cancer Association

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doi: 10.20473/amnt.v5i3.2021. 370-376. **Joinly Published by IAGIKMI & Universitas Airlangga**

Consortium. *Cancer Epidemiol. Prev. Biomarkers* **25**, 1114–1124 (2016).

32. Garwahusada, E. & Wirjatmadi, R. B. HUBUNGAN JENIS KELAMIN, PERILAKU MEROKOK, AKTIVITAS FISIK DENGAN HIPERTENSI PADA PEGAWAI KANTOR [Correlation of Sex, Smoking Habit, Physical Activity and Hypertension among Offi ce Employee]. *Media Gizi Indones.* **15**, 60–65 (2020).

33. Sari, A. M., Ernalia, Y. & Bebasari, E. Hubungan Aktivitas Fisik dengan Kejadian Obesitas pada Siswa SMPN di Pekanbaru. (Riau University, 2017).

34. Jannah, I. N. Hubungan Pengetahuan Gizi, Tingkat Kecukupan Zat Gizi, Body Image, dan Fad Diets dengan Status Gizi Model Remaja Putri di Surabaya. *Universitas Airlangga* (Skripsi. Universitas Airlangga, 2018).

35. Furnham, A., Swami, V. & Horne, G. COVID-19-related stress and anxiety are associated with negative body image in adults from the United Kingdom. *Pers. Individ. Dif.* **170**, 110426 (2020).

36. Khasanah, D., Nur, W. E. & Rauf, S. T. P. R. Hubungan Aktivitas Fisik dengan Status Gizi Remaja Putri di Pondok Pesantren Ta'mirul Islam Surakarta. (Publikasi Ilmiah. Universitas Muhammadiyah Surakarta, 2016).

37. Pengpid, S. & Peltzer, K. Overweight and obesity and associated factors among school-aged adolescents in six pacific island countries in Oceania. *Int. J. Environ. Res. Public Health* **12**, 14505–14518 (2015).

38. Lavie, C. J., Ozemek, C., Carbone, S., Katzmarzyk, P. T. & Blair, S. N. Sedentary Behavior, Exercise, and Cardiovascular Health. *Circ. Res.* **124**, 799–815 (2019).

39. Tian, H. *et al.* An investigation of transmission control measures during the first 50 days of the COVID-19 epidemic in China. *Science (80-.).* **368**, 638–642 (2020).

40. da Silva, A. G. *et al.* Mental health: Why it still matters in the midst of a pandemic. *Brazilian J. Psychiatry* **42**, 229–231 (2020).

41. Brooks, S. K. *et al.* The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* **395**, 912–920 (2020).

42. Wang, C. *et al.* Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int. J. Environ. Res. Public Health* **17**, 1729 (2020).

43. Schuch, F. B. *et al.* Physical activity protects from incident anxiety: A meta-analysis of prospective cohort studies. *Depress. Anxiety* **36**, 846–858 (2019).

44. Schuch, F. B. *et al.* Associations of moderate to vigorous physical activity and sedentary behavior with depressive and anxiety symptoms in self-isolating people during the COVID-19 pandemic: A cross-sectional survey in Brazil. *Psychiatry Res.* **292**, (2020).

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