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Perception of body image, food consumption, sedentary behavior and physical activity in a Brazilian academic population during the lockdown due to the COVID-19 pandemic.

Percepção da imagem corporal, consumo de alimentos, comportamento sedentário e atividade física em uma população acadêmica brasileira durante o lockdown devido à pandemia de COVID-19.

Percepção da imagem corporal, consumo alimentar, comportamento sedentário e atividade física em uma população acadêmica brasileira durante o lockdown devido à pandemia de COVID-19.

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ABSTRACT

The study evaluates the perception of body image associated with food consumption, sedentary behavior, and practice of physical activity responses during the COVID-19 lockdown in the academic population of a Brazilian University. Four hundred fifteen students answered an online survey during 1-31 May/2020. Frequencies were used to describe the outcomes, and the Chi-square test ($p < 0.05$) to determine associations. A negative perception of change in body image was found in both females and males (e.g., 73% and 55%, respectively), significantly associated with a perception of an increase in food consumption, watching TV and social media (more than 2 hours), not practicing physical activity in females, and with an increase in food consumption in males. The results presented a general picture of behavioral responses during the COVID-19 pandemic of students in Brazil, suggesting that a negative perception of body image changing has been associated with health-related behaviors, especially in females.

Keywords: Body image; COVID-19 pandemic; Eating behavior; Sedentarism; Physical activity.

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RESUMEN

El estudio evalúa la percepción de la imagen corporal asociada al consumo de alimentos, el comportamiento sedentario y las respuestas a la práctica de actividad física durante el confinamiento de la COVID-19 en la población académica de una universidad brasileña. Cuatrocientos y quince estudiantes respondieron un *survey* 1 al 31 de mayo de 2020. Se utilizaron frecuencias para describir los resultados y la prueba de *Chi-Squared* ($p < 0,05$) para las asociaciones. Se encontró una percepción negativa del cambio en la imagen corporal tanto en mujeres como en hombres (73% y 55%), significativamente asociada con una percepción de aumento en el consumo de alimentos, ver televisión y redes sociales (más de 2 horas), no practicar actividad física en mujeres y con el consumo de alimentos en hombres. Los resultados presentaron un panorama general de las respuestas de comportamiento durante la COVID-19 en estudiantes de Brasil, lo que sugiere que una percepción negativa del cambio de la imagen corporal se ha asociado con comportamientos relacionados con la salud, especialmente en las mujeres.

Palabras clave: Imagen corporal; COVID-19; Conducta alimentar; Sedentarismo; Actividad física.

RESUMO

O presente estudo avaliou a percepção da imagem corporal com consumo de alimentos, comportamento sedentário e a prática de atividade física durante o *lockdown* em uma população acadêmica de uma universidade brasileira. Quatrocentos e quinze estudantes responderam um questionário on-line durante 1-31 de maio de 2020. Frequências foram utilizadas para descrever os resultados e o teste Qui-Quadrado ($p < 0,05$) para determinar a associação. Foi encontrada uma mudança negativa na percepção da imagem corporal em ambos homens e mulheres (73% e 55%), sendo significativamente associadas com o aumento perceptual do consumo alimentar, assistir TV e uso de mídia social (mais de 2 horas), não praticar atividade física pelas mulheres, e consumo alimentar para homens. Os resultados apresentam uma resposta geral do comportamento de estudantes brasileiros durante o surto do COVID-19, sugerindo que uma percepção negativa de mudança na imagem corporal seja associada com comportamentos relacionados a saúde, especialmente em mulheres.

Palavras chave: Imagem corporal; COVID-19, Comportamento alimentar, Sedentarismo, Atividade física.

INTRODUCTION

Body image could be characterized by a complex perception that our mind created of our own body. The definition of body image fluctuates from weight satisfaction, size perception accuracy and body satisfaction. Also, depends on components as gender, ethnicity and sociocultural influences (Baile et al., 2017). In academic setting, the students' concerns about their appearance, engagement with media images, and inadequate food consumption, could be associated with body dissatisfaction in both sexes (Radwan et al., 2018).

At the beginning of 2020, a severe acute respiratory syndrome, known as coronavirus disease 2019 (COVID-19) spread rapidly throughout China to the rest of the world, causing threats to human health and life (Meo et al., 2020). The lockdown and preventive measures imposed at the beginning of the pandemic triggered negative emotions and psychological responses in academic population (Casagrande et al.,

2020; Khan et al., 2020; Paludo et al., 2021). Negative changes in food consumption (Sidor, Rzymiski, 2020; Zachary et al., 2020), sedentary behaviors (Mazza et al., 2020) and physical activity levels (Sekulic et al., 2020; Zenic et al., 2020) also were reported during the pandemic.

Nonetheless, for those that practice physical activity during the COVID-19 lockdown period, an attenuation of negative psychological responses was found (Reigal et al., 2021). Therefore, considering the lockdown as a stressful factor in which that can trigger negative changes in health behavior, the main aim of this study was to evaluate the perception of change in body image, and the association with perception of food consumption, sedentary behavior and practice of physical activity in students from a Brazilian University.

MATERIAL AND METHODS

Participants

The present study consists in a descriptive cross-sectional design, conducted in a State University, located on Paraná, South of Brazil, during the lockdown due to the COVID-19 pandemic. From March 16th of 2020, presential activities were suspended and home-office activities continued for students, professors and staffs. A total of 405 students answered the survey. Inclusion criteria were being a student at the University selected, being home-quarantined and 18 years older. This study is part of a more comprehensive research project intitule "COVID-19: Psychological and behavioral impacts of social isolation in the university community in a Midwest State of Paraná – Brazil", with ethical committee approval (protocol number 4.002.656). Informed consent was acquired online, in the first part of the survey.

Procedures

An online survey was designed in order to obtain information about the perceptual behavior and physical activity of students during the beginning of the pandemic, in the lockdown period. The survey was uploaded on the *google* online survey platform and a link to the electronic survey was distributed via e-mails, social media and the University webpage. The survey was completed from 1st to May 30th, 2020.

Instrument

The survey had open and close-ended questions to collect the participants' age, biological sex, number of members living together during quarantine, contact with someone diagnosed with COVID-19, body image perception, food consumption perception, sedentary behavior, and practice of physical activities.

Considering the lockdown period, the perception of body image change was assessed using the question: "During this period, did you notice changes in your body?". Participants should answer: "Yes, positive change"; "Yes, negative change" or "No change at all". The perception of food consumption was assessed using the question: "During this period, how are you eating?". Participants should answer: "Normally"; "More than normal" or "Less than normal (lack of appetite)". Sedentary behavior was measure by time spent in front of screen indicators in the following questions: "How much time have you spend watching

TV?"; "How much time have you spend in social media?"; "How much time have you spend playing video games?". Participants should answer: "More than 2 hours" or "Less than 2 hours" for each question. Practical of physical activity was determined with the question: "During this period, have you practice physical activity or exercises?". Participants should answer: "No" or "Yes".

Statistical analyses

Absolute and relative frequencies described demographic characteristics, body image perception, food consumption, sedentary behavior and practice of physical activity. Chi-square tested the association between biological sex, body image with food consumption, sedentary behavior indicators and physical activity. All the statistical analyses were performed using SPSS version 25.0, adopting $p < .05$.

RESULTADOS

Table 1 shows the sociodemographic variables. Most of respondents were female, aged between 18 and 25 years, living in a family with 1 to 3 members during the quarantine. 58% left the city at the beginning of the quarantine, and only eight students had a family or friend diagnosed with COVID-19.

Table 1
Sociodemographic characteristics of the participants (n=405).

Variable		n	%
Biological sex	Female	294	72,6
	Male	111	27,4
Age	18-25	363	89,6
	>25	42	10,4
Quarantine	Alone	17	4,2
	1-3	213	52,6
	>4	175	43,2
Left the city	No	170	42,0
	Yes	235	58,0
Family/Friend COVID19	No	397	98,0
	Yes	8	2,0

Figure 1 and 2 shows the percentage of perceptual change in body image, food consumption, sedentary behavior indicators and physical activity stratified by biological sex. "No change" and "positive change"

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outcomes were pooled together as a positive factor. Females presented a significantly high percentage of negative perception of change of body image, an increase in perception of food consumption, more time in front of the TV and social media compared to males.

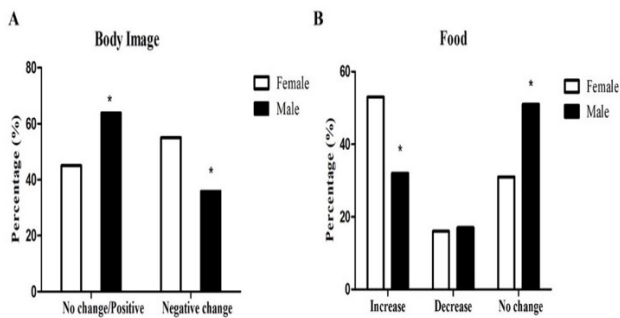


Figure 1. Change in perceptual body image (A) and perception of food consumption (B) during the quarantine period.

* Significant difference from the female. $P: <.05$. Chi-square.

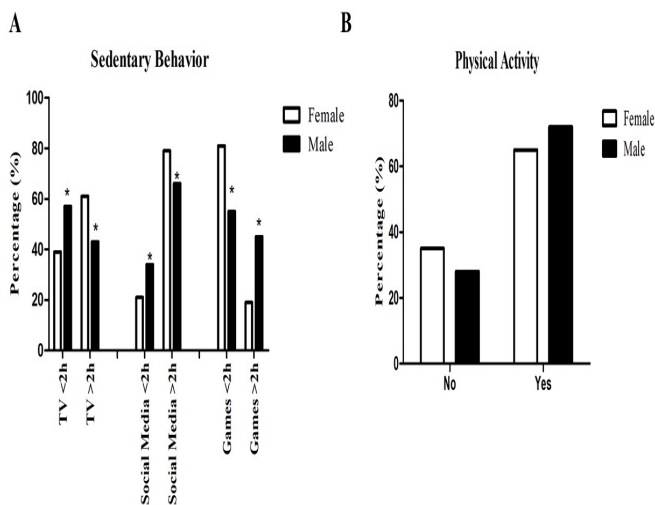


Figure 2. Sedentary behavior indicators (A) and physical activity (B) during the quarantine period.

* Significant difference from the female. $P: <.05$. Chi-square.

Table 2 shows the association among perceptual body image change with perception of food consumption, sedentary behavior indicators and physical activity for each sex. “No change” and “positive change” outcomes were pooled together, as a positive factor. Females demonstrated a negative perception of change

in their body image and this change was significantly associated with an increase in food consumption, watching TV and social media (more than 2 hours) and not practicing physical activity. For males, a negative perception of change in body image was associated with an increase in food consumption.

DISCUSSION

The present study evaluated the perception of change in body image and the association with perception of food consumption, sedentary behavior and practice of physical activity responses in students from a Brazilian University during the COVID-19 pandemic. The main results were: 1) During lockdown time, most of female students perceived a negative change in their body image and men perceived no change or positive change in their body image; 2) Negative perception of body image in women were significantly associated with perception of increase in food consumption, watching TV and social media (more than 2 hours) and not practice of physical activity; 3) Males that reported a negative perception of change in body image increased their food consumption during the lockdown.

Body image dissatisfaction is commonly associated with the perception of being overweight in females (Silva et al., 2019), and the increase in food consumption could contribute to maximize the perception of being overweight. Additionally, the leptin, a food intake regulator, increases in stress situations (Wilson et al., 2005), social isolation (Häfner et al., 2011) and anxiety situations (Brennan et al., 2009). Together, these findings pointed out a complex phenomenon regarding stress-food consumption that could interfere in the perception of body image. In the present study, for those students that reported a perception of increase food consumption during the lockdown, also demonstrated a negative perception of changes in body image in both women (72.7%) and man (55%). Likewise, recent studies demonstrated that the quarantined person presented a weight gain associated with eating behaviors and the gain might be associated with an increase on consumption of food (Sidor & Rzymiski, 2020) due to sight and smell food, stress-response, feel bored (Zachary et al., 2020) and snacking after dinner (Sidor & Rzymiski, 2020).

Table 2.

Association of perceptual body image change with food consumption, sedentary behavior, and physical activity (n=405).

		FEMALE					MALE				
		No change/ Positive change		Negative Change		P	No change/ Positive change		Negative change		p
		n	%	n	%		n	%	n	%	
Food	Increase	39	29.3%	117	72.7%*	<0.001	14	19.7%	22	55%*	<0.001
	Decrease	21	15.8%	27	16.8%		12	16.9%	7	17.5%	
	No change	73	54.9%*	17	10.6%		45	63.4%*	11	27.5%	
TV	<2h	67	50.4%*	48	29.8%	<0.001	38	53.5%	25	62.5%	0.427
	>2h	66	49.6%	113	70.2%*		33	46.5%	15	37.5%	
Social Media	<2h	42	31.6%*	21	13.0%	<0.001	24	33.8%	14	35.0%	1.000
	>2h	91	68.4%	140	87%*		47	66.2%	26	65.0%	
Games	<2h	114	85.7%	123	76.4%	0.054	38	53.5%	23	57.5%	0.617
	>2h	19	14.3%	38	23.6%		33	46.5%	17	42.5%	
P. A	No	37	27.8%	65	40.4%*	0.027	22	31.0%	9	22.5%	0.232
	Yes	96	72.2%*	96	59.6%		49	69.0%	31	77.5%	

Note: P.A = Physical Activity; *Significantly major: no change/positive change vs negative change; P: <.05 Chi-square.

Negative perception of body image changes also was associated with more than 2 hours spent in front of the TV and social media in female students but not in males. Both variables, time in front of the TV and social media, could be interpreted as screen-time exposure. A previous study showed that both male and female adolescents spent more than 2 hours screen-time exposure; however, only female presented an association between higher scores body dissatisfaction and use of screen-time in leisure time (Añez et al., 2018). Therefore, it seems that those females that spent more time in front of the screen could be more vulnerable to a negative body image perception compared to males. Similarly, studies demonstrated a negative relationship between social media (e.g., Facebook and Instagram) and a negative perception of body image in undergraduate female students (Hogue, Mills 2019; Aparicio-Martinez et al., 2019).

In addition, time spend in videoconference motivated by "stay-home" could also influence in a negative way to eating disorders and body image, once self-images during these meetings is a type of a mirror, increasing the preoccupation about the appearance (Rodgers et al., 2020). Regarding the time in front of TV, the

literature shows that watching the news that covered stressful and traumatic world events, can resulted in eating disorders in the users of this type of media (Rodgers et al., 2020). The increase of alarming and distorted information about the COVID-19 pandemic can increase the stress, anxiety and fear of the future. Therefore, the main concern is not only the screen-time exposure, but the type of activities doing during the screen-time.

Finally, the present study also found that female students who practice physical activity during the lockdown reported no change or positive perception of change in body image and those that did not practice physical activity demonstrated a negative change perception in their body image. A decrease in physical activity level after the COVID-19 pandemic was reported in Brazilian people (Tison et al., 2020); in this way, caution in physical activity practice is necessary in similar situation as lockdown, to avoid negative responses from this reduction.

The study present limitations and caution should be taken in the generalization of the results. The main issue is the no use of a specific tool to evaluate body image perception, food consumption, sedentary behavior and physical activity; therefore, we cannot

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discuss the changes deeply. More elaborate questions are recommended in further studies to better understand with more detail about body perception, the type of food is eating during this time, and more detail about the hours spent on the screen (e.g., for working, leisure, and information about the COVID-19 disease). The cross-sectional design also did not allow to assume cause-effect. However, simple questions suggest that the recent lockdown period due to the COVID-19 pandemic affects negatively the perception of the body image and this response is associated with changes in some health-related behaviors.

CONCLUSION

During lockdown due to the COVID-19 pandemic in Brazil, an academic community demonstrated to be affected by negative perception of changes in body image and this change has associated with changes in other health related behaviors such as perception of food consumption and time in front of screen. Negative perception of body image change in women were significantly associated with an increase in perception of food consumption, watching TV and social media (more than 2 hours) and not practicing physical activity during lockdown. In males, those who reported negative perfection of change in body image, was associated with an increase on perception of food consumption.

PRACTICAL APPLICATIONS

The results present a general picture of perception of change in body image and health related behavior during the COVID-19 lockdown in Brazilian academics and as a practical application, further steps are required to help this community in case of a similar condition in the future. It is important to highlight that the COVID-19 still an ongoing virus that requires caution. Program including psychological interventions as well as health food consumption and exercise practice via online methods is needed during lockdown period as well as after this period, in case of negative responses remain.

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