RESEARCH ARTICLE

Determination of changes in the nutrition and physical activity status of academicians during the pandemic period

Gulsen Delikanli Akbay[1], Erdinc Karakullukcu[2]

Abstract

Objective: To assess the changes in nutrition habits, physical activity levels, sedentary behaviours, sleep patterns and quality of academicians before and during the coronavirus disease-2019 pandemic.

Method: The descriptive, cross-sectional study was conducted from January to September 2022 after approval from Karadeniz Technical University, Turkiye, and comprised academicians working at public universities in Turkiye during the coronavirus disease-2019 pandemic period. The survey questionnaire was distributed online to all public universities across the country. The participants' food consumption before and during the epidemic, sleep patterns and physical activity conditions were assessed. Data was analysed using SPSS 22.

Results: Of the 299 academicians,166(55.5%) were female and 133(45.5%) were male. Overall age range was 19-65 years, with 122(40.8%) subjects aged 35-44 years. A significant number of academicians 143(47.83%) reported changes in their eating habits, while even more 189(64.29%) indicated that a sedentary lifestyle had a negative impact on their health. There was a significant increase in the number of snacks ($p<0.001$). A total of 125(42.09%) participants reported using nutritional supplements during the pandemic, with vitamins, multivitamins and minerals being the most commonly chosen options. A significant majority of participants 178(59.73%) reported changes in sleep patterns and weight-gain during the pandemic. The time spent watching TV and using computers, tablets and phones increased significantly during the isolation period ($p<0.05$). Also, there was a decrease in the physical activities of the academicians ($p<0.05$).

Conclusion: Even within more aware segments of the population, such as academicians, the coronavirus disease-2019 pandemic's impact on psychological wellbeing led to significant alterations in eating, sleeping and physical activity patterns.

Key Words: COVID-19, Physical activity, Sleep, Feeding behaviour, Nutrition.

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Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), identified in January 2020 as the cause of coronavirus disease-2019 (COVID-19), originated in Wuhan, China, and quickly spread globally, leading to a pandemic declaration by the World Health Organisation (WHO) on March 11, 2020.[1] Common symptoms included fever, dry cough, shortness of breath and pneumonia.[1] To reduce transmission, countries implemented measures to limit social contact. In Turkiye, curfews and restricted outdoor access regulations were enforced, resulting in workforce losses, economic downturns, remote working, suspended social activities and online education.[2]

Immunity is the body's defence against pathogens, involving cells, tissues and molecules that resist infections.[3] A strong immune system is crucial for protecting against COVID-19 and related complications, especially in individuals with weakened immunity.[3] Environmental factors, like smoking, alcohol and stress, and individual factors, like body mass index (BMI), vaccination and nutrition, influence immune function.[4]

During the pandemic period, individuals experienced periods of emotional hunger, which is defined as the eating behaviour that individuals develop in situations such as pressure, stress and sadness.[5] It has been reported that the fear of death, fatalities, mandatory closures and economic pressures of the pandemic trigger emotional eating behaviour.[6]

Emotional eating and overeating, driven by negative emotions, often lead to weight-gain due to high-energy, sugary foods.[7] A 2021 study found an increase in emotional and uncontrolled eating during social isolation[8], and a review showed 33% anxiety rates during the pandemic.[9]

Long-term closures caused sleep disorders, psychological issues, reduced physical activity and poor nutrition which

[1]Department of Nutrition and Dietetics, Karadeniz Technical University, Trabzone, Turkiye. [2]Department of Statics and Computer Sciences, Karadeniz Technical University, Trabzone, Turkiye.

Correspondence: Gulsen Delikanli Akbay.

mail: gulsen.delikanli@ktu.edu.tr

ORCID ID: 0000-0003-1366-4685

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hindered healthy living.[10,11] Depression and obesity are also linked to such phases and pose significant financial burdens.[12,13]

Academicians, as a highly educated group, also experienced changes in their physical health and eating habits during the COVID-19 pandemic. However, research on these changes among them, to our knowledge, is limited. The current study was planned to fill the gap in literature by assessing the changes in nutrition and physical activity among academicians during the COVID-19 period, focussing on changes in sleep, nutrition and physical activity.

Subjects and Methods

The descriptive, cross-sectional study was conducted from January 2022 to September 2022 in Turkiye after approval from the ethics review board of Karadeniz Technical University, Turkiye. According to the Council of Higher Education[14] of Turkiye, approximately 155,000 academicians work in public universities. The required sample size for statistical analyses was determined using the G*Power[15] software, based on power 0.90, alpha (α) 0.05 and Cohen's d 0.20.[16] The sample was raised using non-probabilistic methods, convenience and self-selection sampling techniques, to target the homogeneous group of academicians. An online survey was used due to COVID-19 restrictions, with the link distributed online via the Electronic Document Management System (EDMS), social media and email, which included an informed written consent mechanism.

Individuals were eligible for inclusion if they were actively employed as academicians at any university in Turkiye during the study period. Those providing illogical or inappropriate responses or giving internally inconsistent answers within the same questionnaire were excluded.

Data was collected using a Google Forms survey comprising 38 questions (some with sub-items), which took approximately 15 minutes to complete. The survey included five sections: demographic information; general health and vaccination status during the pandemic; a Likert-type scale to assess food consumption frequency before and during the pandemic, as well as changes in nutrient intake; statements about life changes during the pandemic, where participants indicated their level of agreement on a 5-point Likert-type scale ranging from "completely disagree" to "completely agree"; and questions comparing sleep and physical activity before and during the pandemic.

The questionnaire was pilot-tested with 20 academicians to assess clarity, comprehensibility and item relevance. Feedback from the pilot study was used to refine wording, adjust response options, and improve the overall flow, thereby supporting content validity. Because the questionnaire sections consisted of independent items designed to capture distinct aspects of lifestyle and behavioural change rather than forming a unified psychometric scale, no composite scores or subscales were created. For this reason, internal consistency measures, such as Cronbach's alpha were not applicable. Reliability was supported through clear item wording, pilot-testing and the use of standardised Likert-type formats, where appropriate.

Data was analysed using SPSS 22. Data was expressed, as appropriate, through mean +/- standard deviation, median with interquartile range (IQR), and frequencies and percentages. Since the parametric test assumptions were not met, non-parametric tests were applied. The Wilcoxon signed-rank test was used to compare paired numerical variables before and during the isolation period (e.g., time spent on activities, sleep duration). The sign test was used for paired ordinal variables with non-symmetric distributions. The McNemar test was applied for paired categorical variables (e.g., changes in vaccination status). Additionally, chi-square goodness-of-fit tests were used to evaluate whether the distribution of change categories for food consumption differed significantly from an equal-proportions expectation. The selection of each test was based on the measurement level and distributional characteristics of the corresponding variables. A p-value of less than 0.05 was considered statistically significant.

Results

Of the 310 respondents, 299(96.45%) comprised the final sample; 166(55.5%) females and 133(45.5%) males. Overall age range was 19-65 years, with 122(40.8%) subjects aged 35-44 years. General and professional characteristics of the subjects along with their health and COVID-19 vaccination status were noted in detail (Table 1).

There were significant deviations from equal-proportion expectations for all foods ($p<0.001$), and nuts, fresh fruits, pastries and desserts had the largest increases, while carbonated drink consumption remained predominantly unchanged (Table 2).

Snack frequency increased significantly ($p<0.001$), but no change was observed in main meals ($p=0.422$). Regarding dietary supplements, 125(42.09%) of the participants used them, mainly for immune support 101(80.8%). Common supplements included vitamins 59(47.2%), multivitamins 26(20.8%), minerals 25(20%) and probiotics 8(6.4%).

Table-1: General characteristics of the participants and their health/vaccination status..

Features	Frequency (%)	Features	Frequency (%)
Gender (n = 299)		**Having a Chronic Disease (n = 299)**	
Woman	166 (55.5)	Yes	46 (15.38)
Man	133 (44.5)	**Disease Type**	
Age (n = 299)		Respiratory system	6 (2.01)
19-24	2 (0.67)	Immune system	6 (2.01)
25-34	94 (31.44)	Cardiovascular system	13 (4.35)
35-44	122 (40.80)	Endocrine system	16 (5.35)
45-54	55 (18.39)	Nervous system	4 (1.34)
55-65	26 (8.70)	Digestive system	1 (0.33)
Academic Title (n = 299)		No	253 (84.62)
Professor	39 (13.04)	**COVID-19 Infection (n = 299)**	
Associate professor	45 (15.05)	Yes	77 (25.75)
Assistant professor	66 (22.07)	No	205 (68.56)
Research assistant	84 (28.09)	Do not know	17 (5.69)
Teaching assistant	62 (20.74)	**Vaccination (n = 289)**	
Lecturer	3 (1.00)	Yes	286 (95.65)
Field of Study (n = 298)		No	13 (4.35)
Educational sciences	71 (23.83)	**Voluntary Vaccination (n = 284)**	
Physical sciences	46 (15.44)	Yes	272 (95.77)
Health sciences	98 (32.89)	No	12 (4.23)
Social sciences	70 (23.49)	**Number of Vaccines Taken (n = 276)**	
Arts sciences	13 (4.36)	1	2 (0.72)
Marital Status (n = 299)		2	166 (60.14)
Single	210 (70.23)	3	77 (27.90)
Married	89 (29.77)	4	30 (10.87)
Face-to-face Education in Isolation (n = 299)		5	1 (0.36)
Every weekday	148 (49.50)	**Brand of Vaccine Taken (n = 276)**	
Certain days of the week	147 (49.16)	Pfizer-BioNtech	202 (73.19)
Never	4 (1.34)	Sinovach	27 (9.78)
		Pfizer-BioNtech and Sinovach	47 (17.03)

COVID-19: Coronavirus disease-2019.

Table-2: Consumption status of different foods during the pandemic period and the usage of nutritional supplements.

Nutrients	Increased	Decreased	Unchanged
Pastry (n=143)	81 (56.64)	37 (25.87)	25 (17.48)
Meat Products (n=142)	43 (30.28)	33 (23.24)	66 (46.48)
Desserts (n=143)	79 (55.24)	35 (24.48)	29 (20.28)
Fried food (n=140)	47 (33.57)	35 (25.00)	58 (41.43)
Fresh Fruit (n=142)	92 (64.79)	12 (8.45)	38 (26.76)
Packaged Food (n=141)	58 (41.13)	43 (30.50)	40 (28.37)
Frozen Food (n=141)	49 (34.75)	47 (33.33)	45 (31.91)
Nuts (n=141)	103 (73.05)	9 (6.38)	29 (20.57)
Carbonated Drinks (n = 141)	29 (20.57)	37 (26.24)	75 (53.19)

Most participants agreed that inactivity negatively affected their health 189(64.29%), and many reported changes in sleep patterns and weight 178(59.73%). There was a significant deviation from a uniform response distribution regarding increased tea, coffee and cola consumption ($p<0.001$), with most participants disagreeing (Table 3).

Significant increases were observed in time spent watching TV and using digital devices ($p<0.001$), as well as time spent sitting, reading or watching TV at home ($p<0.001$). Time spent on office work significantly decreased ($p<0.001$). No significant changes were observed in fast walking ($p=0.311$) or sports activities ($p=0.085$). More than half of the participants 159(53.36%)

Table 3: Participants' self-reported changes in health and eating behaviours during the pandemic.

Statements	1	2	3	4	5	Median	Mean
Inactivity during the epidemic negatively affected my health (n=294)	22(7.48)	47(15.99)	36(12.24)	119(40.48)	70(23.81)	4	3.57
The psychological situation during the epidemic increased my desire to eat (n=298)	23(7.72)	75(25.17)	45(15.10)	103(34.56)	52(17.45)	4	3.29
My sleep pattern changed during the epidemic (n=298)	24(8.05)	65(21.81)	31(10.40)	96(32.21)	82(27.52)	4	3.49
My weight increased during the epidemic (n=298)	24(8.05)	65(21.81)	31(10.40)	96(32.21)	82(27.52)	4	3.49
My diet changed during the epidemic (n=297)	34(11.45)	75(25.25)	21(7.07)	89(29.97)	78(26.26)	4	3.34
My consumption of ready-made food increased during the epidemic (n=298)	19(6.38)	72(24.16)	39(13.09)	103(34.56)	65(21.81)	4	3.41
My consumption of tea, coffee and cola drinks increased during the epidemic period (n=299)	69(23.08)	99(33.11)	39(13.04)	54(18.06)	38(12.71)	2	2.64
I had sleep problems during the epidemic (n=299)	48(16.05)	77(25.75)	40(13.38)	89(29.77)	45(15.05)	3	3.02
My nutrition expenses increased during the epidemic (n=298)	45(15.10)	83(27.85)	41(13.76)	77(25.84)	52(17.45)	3	3.03
My cigarette and alcohol consumption increased during the epidemic (n=298)	26(8.72)	72(24.16)	42(14.09)	95(31.88)	63(21.14)	4	3.33

1: Completely disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Completely agree.

Table 4: Comparison of the time spent by individuals on daily activities before and during the isolation period.

	Before the IsolationPeriod				During the Isolation Period				
Feature	Mean	Q1	Q2	Q3	Mean	Q1	Q2	Q3	p-value
Time spent on (hours) computer, phone, tablet etc. (n=280)	6.10	4.00	5.75	8	6.70	4	6	9	<0.001
TV watching time (hours) (n=283)	2.15	1	2	3	2.63	1	2.5	4	<0.001
Time spent asleep (minutes) (n=268)	417.13	360	420	480	431.42	360	420	480	0.017
Time spent watching TV, sitting, or reading (minutes) (n=258)	193.22	120	180	240	241.25	120	180	300	<0.001
Time spent for office work done while standing (minutes) (n=89)	203.38	90	150	325	106.29	30	60	120	<0.001
Time spent for housework while standing (minutes) (n=123)	114.59	60	120	120	152.40	60	120	180	<0.001
Time spent during slow walking (minutes) (n=234)	70.80	30	60	82.50	64.85	30	60	60	0.004
Time spent during fast walking (minutes) (n=182)	52.86	27.50	30	60	57.59	20	30	60	0.311
Time spent during sport activities (minutes) (n=235)	52.21	0	45	65	55.95	0	30	60	0.085
Time spent on other activities (minutes) (n=194)	75.27	27.50	60	120	81.26	10	60	120	0.923

All analyses were conducted using the Wilcoxon Signed-Rank Test. Q1: 1st quartile, Q2: 2nd quartile, Q3: 3rd quartile.

reported changes in sleep duration, mainly increases 95(59.75%). Sleep quality worsened for most of those reporting a change 122(80.79%). Physical activity participation decreased from 170(56.86%) pre-isolation to 134(46.05%) during isolation. The decline in physical activity levels was significant (p=0.003) (Table 4).

Discussion

The COVID-19 pandemic significantly disrupted daily routines, leading to widespread irregularities in lifestyle behaviours, such as sleep, physical activity and nutrition. Focusing on a professional cohort within higher education, the current study aimed at assessing the specific changes in dietary and physical activity patterns among academic staff at public universities in Turkiye during the pandemic phase.

According to data obtained from the Council of Higher Education[24] of Turkiye covering the period during which this study was conducted, the ratio of female and male academicians in the country was 45.1% and 54.9%, respectively, while for the academicians participating in the current study, this ratio was 55.5% and 44.5% for female and male academicians, respectively. Most of the academicians participating 122(40.8%) were aged 35-44 years. In the current study, the rate of academicians with chronic diseases was 15.38%. A study conducted with academicians at two universities in Turkiye determined that the same rate was 21.4%.[17]

A systematic review and meta-analysis by Mengistu et al.[18] assessed global COVID-19 vaccine acceptance rates using studies published between February 2020 and June 2022. The global pooled acceptance rate was 64.9% (95%

confidence interval [CI]: 60.5-69.0), with significant regional variation: the highest acceptance rate was observed in the South-East Asia Region (81.0%; 95%CI: 59.9-92.4), while the lowest was in the Eastern Mediterranean Region (50.8%; 95%CI: 43.4-57.2). In contrast, the current study, which focussed specifically on academicians, found a markedly higher vaccination rate (95.65%). This disparity may be related to socioeconomic and educational factors, as academicians typically have greater access to health information and resources, as well as targetted vaccination efforts in Turkiye prioritised institutional environments, such as universities. Vaccination-related findings were included as part of the broader assessment of pandemic-related health behaviours, as vaccination status can influence perceived risk, stress levels and daily routines, which in turn may affect lifestyle behaviours, such as nutrition, physical activity and sleep.

In the current study, 143(47.83%) individuals stated that their eating habits did not change during the epidemic period. The most important change in eating habits was the increase in the number of individuals consuming fatty and sugary foods every day. An increase in the consumption of high-energy foods due to their fat and sugar content is an expected situation during the pandemic period. The increase in the number of people consuming fruits and vegetables, milk and eggs every day suggests that these foods were used to strengthen the immune system during the pandemic. Additionally, the increase in the consumption of nuts and pastries with high energy content is also associated with an increase in emotional eating desire. Likewise, in this study, the rate of individuals who confirmed that the psychological state during the epidemic increased their desire to eat was 52.01%. It was determined that there was a significant increase in the number of snacks of the participants during the pandemic period. Factors such as increased time spent at home, decreased social activities and emotional hunger are thought to increase the number of snacks, and, in direct proportion, the number of snacks. Among the participants, those who confirmed that their weight, nutritional expenses and sleep disorders increased during the epidemic period were 59.73%, 43.29% and 59.73%, respectively. Research in Italy and other European countries has examined the impact of quarantine on lifestyle changes, particularly in relation to eating habits and physical activity.[19-23] These studies have explored the potential link between these lifestyle modifications and weight-gain. In the same vein, there are studies showing that spending quarantine days at home increases eating.[24,25] In a study conducted during the pandemic period, it was observed that more than 20% of individuals experienced weight-gain, sleep and physical activity times decreased, and post-dinner snack consumption increased.[26]

In the current study, the time spent using computers, phones, tablets and similar digital devices increased significantly during the lockdown period. The participants appeared to engage with these technologies more frequently for accessing pandemic-related information, filling additional free time, and maintaining social interaction. Concurrently, a notable reduction was observed in the time allocated to office work, likely reflecting the transition of professional duties to the home environment. Similar patterns have been documented elsewhere. For example, a survey of 476 academics worldwide reported a rapid rise in the use of Information and Communication Technologies (ICT) tools (such as communication applications, e-learning platforms and social media) to support research and teaching during the pandemic.[27] This broader evidence aligns with the increased digital engagement observed among participants in the present study.

The current study has several limitations. The cross-sectional design restricts the ability to infer causality. Since the study employed convenience and self-selection sampling, the findings may be subject to selection bias and limited external validity, as academicians who chose not to participate may differ systematically from those who responded, reducing the generalisability of the results. The study relied on self-reported information, which introduces the possibility of reporting inaccuracies or social desirability bias. Because the survey was administered at a single time point, the participants were required to recall their pre-pandemic lifestyle habits, making the data susceptible to recall bias. Additionally, the online survey format may introduce online-survey bias, potentially excluding individuals with limited internet access or lower motivation to complete digital questionnaires. Longitudinal or mixed-methods studies are recommended to more accurately capture temporal changes.

Conclusion

Even within a relatively health-aware population, like the academics, pandemic-related stressors, such as confinement, uncertainty and anxiety, were associated with changes in lifestyle habits.

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GDA: Design, data collection, analysis, interpretation, writing, drafting, revision, review, final approval and agreement to be accountable for all aspects of the work.
EK: Design, data collection, analysis, drafting, review and final approval.