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Lifestyle of Italian University Students Attending Different Degree Courses: A Survey on Physical Activity, Sleep and Eating Behaviors during the COVID-19 Pandemic

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Abstract: The current study aimed to evaluate the Italian university students' lifestyle during the COVID-19 pandemic, considering the degree courses, chronotype, and sex. Five-hundred thirty-three participants (21.46 ± 0.18 yrs, 335 females) filled out: Godin-Shephard Leisure Time Physical Activity Questionnaire (GSL-TPAQ), Pittsburgh Sleep Quality Index (PSQI), Mediterranean Diet Quality Index (KIDMED), Reduced Morningness-Eveningness Questionnaire (rMEQ) to assess physical activity, sleep, nutrition and chronotype. Use of electronic devices, smoking, and drinking habits were also evaluated. Sports science students were more active (60.92 ± 2.96), slept better (4.40 ± 0.15), showed greater Mediterranean diet adherence (5.98 ± 0.31), and smoked less (smokers: 14.5%) than nursing students (GSL-TPAQ: 38.62 ± 2.92, PSQI: 5.29 ± 0.18, KIDMED: 4.23 ± 0.33, smokers: 27.9%). They displayed a higher percentage of beer drinkers (40% vs. 28.7%) and lower use of electronic devices (5.92 ± 0.17 vs. 9.07 ± 1.17). Evening-type students showed worse sleep (5.96 ± 0.30) and lower Mediterranean diet adherence (4.32 ± 0.52) than Neither- (PSQI: 4.58 ± 0.13, KIDMED: 5.13 ± 0.28) and Morning-types (PSQI: 4.33 ± 0.33, KIDMED: 6.71 ± 0.64). Evening-types also showed a higher percentage of smokers (29.9%) and drinkers (beer: 53.3%, wine: 45.8%, alcohol: 40.2%) than Neither- (smokers: 20.3%, beer: 31.4%, wine: 31.4%, alcohol: 23.5%) and Morning-types (smokers: 8.9%, beer: 19.6%, wine: 19.6%, alcohol: 8.9%). Evening-type males used electronic devices longer (9.10 ± 3.05) than females (6.71 ± 0.41). Females showed fewer drinkers (beer: 26.6%, wine: 29.6%) than males (beer: 49.0%, wine: 38.9%). Maintaining a correct lifestyle even in this unusual condition is essential, in particular among the Evening-type students.

Keywords: chronotype; physical activity; sleep; eating behaviors; lifestyle; quality of life; COVID-19 pandemic

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1. Introduction

University students are exposed to several unhealthy behaviors, e.g., those related to physical activity, sleep, and nutrition. Academic commitments and the characteristics of the degree courses attended could influence the daily habits of university students. Furthermore, sex and chronotype (CT) are other important factors that influence people's lifestyles, particularly those of university students.

Studies reported a progressive decrease in physical activity levels since attending college, showing levels below the minimum recommended by the World Health Organization [1,2], associated to long periods of sitting [3–5]. Other studies reported poor sleep quality in this population [6–8], with a high percent of students that displayed insomnia symptoms [9]. Mesquita and Reimão [10] showed that 60.4% of the participants were poor sleepers, and that sleep worsened as computer use increased. These unhealthy behaviors lead university students towards poor eating habits [11,12]: snacking regularly, consuming fewer than three meals/day and lower vegetables and fruit, eating fried foods

at least 3–5 times a week, and exceeding the guidelines for alcohol intake [13,14]. These habits expose individuals to an increased risk of developing several pathologies, e.g., type 2 diabetes, metabolic syndrome, cardiovascular disease, and depression [15–18]. Some environmental factors that influence these students' behaviors are poorly studied. One of these is related to the degree course attended, since the structure of the lessons or internship and the experiences deriving from each degree program can lead to different daily behaviors. Gallè et al. [19] showed that students of healthcare-related degree courses displayed lower physical activity levels, and higher sitting time and smokers than non-healthcare-related degree course students. In a study by Munoz-Rodriguez et al. [20], it was shown that students attending non-biomedical degree courses have higher body mass index, lower regularity in the intake of meals and in the consumption of colored vegetables and fruits, and higher alcohol intake compared to the biomedical degree courses. By contrast, biomedical students made healthier food choices and showed a higher level of weekly walking.

Circadian rhythms can play an important role in health [21]. The expression of circadian rhythms differs across individuals, identifying three CTs: Morning-types (M-types), Neither-types (N-types), and Evening-types (E-types). The differences between M-types and E-types refer in particular to sleep-wake timing [22] and mental/physical activation over 24 h [22–26], with an early peak in the M-types. N-types have intermediate characteristics and include about 60% of the population [27,28]. Evidence suggests that E-types are exposed to several unhealthy behaviors, increasing the risk of developing cardio-metabolic diseases, depressive and anxiety symptoms [29–34].

Sex is another important factor that affects people's lifestyle. It is well documented in the literature that there are sex-related differences in physical activity, sleep, and nutrition, with females leading a better lifestyle than males [35,36].

Taking into account the chronotype- and sex-related lifestyle considerations and adding the lifestyle characteristics of the university students, it is easy to understand how important it can be to consider the complex interaction between all these variables in the study of the university students' lifestyle.

Furthermore, the COVID-19 pandemic has recently led to an unprecedented change in daily life. In Italy, the COVID-19 pandemic started in February 2020 and lockdown measures were applied from March to May 2021 and from October 2021 to March 2022. These measures obliged citizens to a period of home confinement. School, sports, and many other activities in presence were not considered strictly necessary and converted into home-based activities. Inevitably, these measures have had a considerable impact on the psychophysical sphere. Studies showed an overall decrease in physical activity levels during the lockdown due to pandemic restrictions, and pre-COVID-19 versus post-COVID-19 lockdown [37]. Instead, the opposite results were found in the effect of the limitations related to the restrictions on sleep in university students. Wright et al. [38] showed that, during the lockdown, the time in bed increased by about 30 min and 24 min during the weekdays and weekends, respectively. The regularity of sleep timing improved by about 12 min, and the participants improved their sleep duration by about 50 min during weekdays and about 25 min on weekends. By contrast, Marelli et al. [39] showed that the effect of lockdown on sleep determined an increase in bed-time, sleep latency, and wake-up time during the COVID-19 pandemic compared to the pre-COVID period, showing a worsening sleep quality and an increase in insomnia symptoms. Nutrition is another aspect affected by the lockdown. During the pandemic, Italians preferred to use canned food, considered safer, and products such as pasta, flour, eggs, and long-life milk, as well as frozen foods. At the same time, the consumption of fresh foods, such as fruit and vegetables, decreased [40] in concomitance with an insufficient control diet [41].

The lockdown also had effects on CTs. To the best of our knowledge, few studies have investigated this, and they solely focused on sleep. E-types displayed more sleep problems than the others, showing a higher prevalence of poor sleep quality, sleep onset and maintenance problems, clinically severe insomnia, and excessive sleepiness [42,43].

Therefore, the restrictions relating to the COVID-19 pandemic obliged the human population to change their lifestyle affecting physical activity, sleep, and nutrition. Based on this evidence, we have hypothesized that some variables, such as sex, chronotype or degree courses attended that usually influence daily habits, could be other elements that affected the lifestyle adopted during the pandemic. The aim of the present study was to evaluate the physical activity levels, sleep, and nutrition behaviors of Italian university students during the COVID-19 pandemic. Moreover, we evaluated the possible influences of degree courses attended, CT, and sex on lifestyle.

2. Materials and Methods

2.1. Participants

University students from the University of Milan, Italy, were recruited. After giving their consent to participate in the study, subjects completed an online questionnaire. It assessed participants' age, weight, height, physical activity, and eating and sleep behaviors. Participants' habits of smoking, consuming beer, wine, alcohol, and the use of electronic devices during the day were also assessed. The questionnaire was administered at the beginning of the second lockdown (November 2020). According to the availability provided by the university, students attending degree courses in sports science (Sdc) and nursing (Ndc) were enrolled. In order to have comparable groups and to avoid recruiting subjects working night shifts, first-year students were recruited. Due to pandemic restrictions, subjects attended only online university lectures (from 8:30 am to 4:30 pm, from Monday to Thursday), and did not take exams during or immediately before the data registration period.

2.2. Measurements

2.2.1. Circadian Typology Assessment

We administered the Italian version of the Reduced Morningness-Eveningness Questionnaire (rMEQ), to assess the subject's circadian typology [44]. The rMEQ is a questionnaire of 5 items that investigates the ideal wake-up time, mood, and state of activation upon awakening and the time of day when the subject feels less active or more tired [45]. Each question of rMEQ has four or five possible answers with a different score. Subjects are classified as M-types, N-types, or E-types with a score higher than 17, between 12 and 17, and less than 12, respectively.

2.2.2. Physical Activity Assessment

Physical activity behavior was evaluated by administering the Godin-Shephard Leisure Time Physical Activity Questionnaire (GSL-TPAQ). The GSL-TPAQ is composed of 3 questions about the number of times spent in physical activity with three different intensities (strenuous, moderate and mild/light) in a typical 7-day period. Each answer is multiplied by a corresponding metabolic equivalent of task value (3, 5, and 9 for mild/light, moderate, and strenuous intensity, respectively) and summed to obtain a score index. A score equal to or higher than 24 classifies subjects as active, a score between 14 and 23 as moderately active, and a score lower than 14 as inactive [46].

2.2.3. Sleep Assessment

Participants filled out the Italian version of the Pittsburgh Sleep Quality Index (PSQI), a self-report questionnaire that detects sleep quality during the 30 days before completion [47]. It consists of 18 items, which evaluate participants' perceived sleep quality, sleep latency, sleep duration, sleep efficacy, sleep disturbances, use of sleep medications, and daytime dysfunctions. The total score ranges between 0 and 21, differentiating good sleepers (0–5) from bad sleepers (6–21) [48]. The lower the final score, the better the quality of sleep.

2.2.4. Nutritional and Healthy Behavior Assessment

Eating habits were evaluated by administering the Italian version of the Mediterranean Diet Quality Index for Children and Adolescents (KIDMED) [49,50]. It is based on the analysis of the principles of the Mediterranean diet and consists of 16 questions that return a final score from 0 to 12. The questions with a negative connotation were assigned a score of −1, and those with a positive aspect +1. The total score ranges between three levels: 0–3 (poor adherence to the Mediterranean diet), 4–7 (medium adherence), 8–12 (high adherence).

2.2.5. Use of Electronic Devices Evaluation

The questionnaire also included questions about the amount of use of electronic devices during the day (AUED), with questions regarding the use of smartphones, computers, tablets, television, or other electronic devices during waking hours. The data are recorded and expressed in the text as h/day.

2.2.6. General Questions on Subjects' Age, Antropometric Data and Habits of Smoking, Consuming Beer, Wine, and Alcohol

The online questionnaire also included questions about the participants' age, weight, height and habits of smoking, and consuming beer, wine, and alcohol

2.3. Statistical Analysis

The mean and standard error were calculated for quantitative variables, and the frequency for qualitative variables. GSL-TPAQ, PSQI, and KIDMED scores were expressed as quantitative variables, as well as age, weight, height, BMI, and AUED. By contrast, the habit of smoking and drinking are expressed as qualitative variables. The normality of the quantitative variable's distributions were evaluated by the Shapiro–Wilk test. All quantitative variables are non-normally distributed. The log transformation was used to normalize the data. Regarding the analyses, degree course, CT and sex were considered independent variables, while GSL-TPAQ, PSQI, KIDMED, and AUED were considered dependent variables. A three-way analysis of variances (ANOVA) test was used to evaluate the combined effect of the independent variables (degree course, CT and sex) on the dependent variables (GSL-TPAQ, PSQI, KIDMED, and AUED). If necessary, we performed between-groups and within-groups comparisons, correcting the *p*-value with the Bonferroni adjustment. Due to the difficulty for the readers to understand the meaning of log-transformed variables, we perform the same analysis with the original data. Since the results were unchanged, we reported the results of the original data. Moreover, the GSL-TPAQ variable showed three outliers. Because of this, we performed all analyses with and without them. Having found no differences in the analysis results, we presented the total sample data and used the original data. We investigated the strength of the significant comparisons by evaluating the effect size according to Cohen's d interpretation [51] (d: 0.2 = "small", 0.5 = "medium", 0.8 = "large"). Regarding the qualitative variables, we performed the logistic regression model to investigate their possible relationship with the degree course, CT and sex. The statistical analyses were performed using SPSS Statistics version 27 (IBM SPSS Statistics for Windows, Armonk, NY, USA: IBM Corp), setting the statistical significance to 0.05.

3. Results

The total sample (21.46 ± 0.18 years) consisted of 533 university students, 335 females and 198 males. 275 were Sdc (127 females) and 258 were Ndc (208 females) students. Regarding the CT distribution of the total sample, it consisted of 56 M-types (10.5%), 370 N-types (69.4%) and 107 E-types (20.1%). Referring to sleeping habits, 93.4% of participants did not used sleeping medications in the last month.

Three-way ANOVA (degree course x sex x CT) did not show interaction for physical activity levels (GSL-TPAQ), sleep (PSQI), and nutrition (KIDMED). We found a statistically significant combined effect of sex and CT on the amount of use of electronic devices during

the day (AUED). Main effects of some of the models showed a statistically significant *p*-value only for degree courses and CT.

Three-way ANOVA (degree course x sex x CT) showed statistically significant main effects of the degree course on GSL-TPAQ (F = 5.601, df = 1, $p = 0.018$, $\eta p^2 = 0.011$), PSQI (F = 3.929, df = 1, $p = 0.048$, $\eta p^2 = 0.007$), KIDMED (F: 14.701, df: 1, $p < 0.001$, $\eta p^2 = 0.027$), and a tendance for the AUED (F: 3.665, df: 1, $p = 0.056$, $\eta p^2 = 0.007$). People who attended the Sdc group were more active (d = 0.5), slept better (d = 0.3), displayed a higher adherence to the Mediterranean diet (d = 0.5), and showed a trend of higher use of electronic devices compared to Ndc group (Table 1). Logistic regression analyses showed a relationship between degree courses and habits of smoking ($p < 0.001$, OR 2.274, CI 95% 1.477–3.502) and drinking beer ($p = 0.006$, OR 0.603, CI 95% 0.420–0.866), displaying a lower percentage of smokers and a higher percentage of beer drinkers in Sdc than Ndc groups. No significant results were found for alcohol or wine consumption (Table 1).

Table 1. Comparison of physical activity, sleep, eating habits, and use of electronic devices between degree courses.

	Sdc	**Ndc**
GSL-TPAQ	60.9 ± 3.0 *	38.6 ± 2.9 *
PSQI	4.4 ± 0.2 °	5.3 ± 0.2 °
KIDMED	6.0 ± 0.3 #	4.2 ± 0.3 #
AUED	5.9 ± 0.2	9.1 ± 1.2
SMOKERS	14.5% §	27.9% §
BEER DRINKERS	40.0% ç	28.7% ç
WINE DRINKERS	34.9%	31.0%
ALCOHOL DRINKERS	25.1%	25.6%

Data are reported as mean ± standard error or percentage. Superscript symbols correspond to statistically significant differences between the two groups: * $p = 0.018$, ° $p = 0.048$, # $p < 0.001$, § $p < 0.001$, ç $p = 0.006$. Sdc = students attending degree courses in sports science, Ndc = students attending degree courses in nursing, GSL − TPAQ = Godin-Shephard Leisure Time Physical Activity Questionnaire, PSQI = Pittsburgh Sleep Quality Index, KIDMED = Mediterranean Diet Quality Index for Children and Adolescents questionnaire, AUED = amount of use of electronic devices h/day.

Three-way ANOVA (degree course x sex x CT) also showed a statistically significant main effects of CT on PSQI (F = 7.085, df = 2, $p = 0.001$, $\eta p^2 = 0.026$) and KIDMED (F: 4.752, df: 2, $p = 0.009$, $\eta p^2 = 0.018$). No statistically significant main effect was found in physical activity and the use of electronic devices. E-types showed worse sleep than M-types ($p = 0.006$, d = 0.6) and N-types ($p < 0.001$, d = 0.5). No difference was found between M- and N-types. Moreover, M-types showed a higher adherence to the Mediterranean diet compared to E-types ($p = 0.006$, d = 0.3) and N-types ($p = 0.05$, d = 0.5), with E-types that showed the lowest score of Mediterranean diet adherence (Table 2). The analyses also showed a statistically significant relationship between CTs and smoking, as well as beer, wine, and alcohol. E-types showed higher percentage of smokers than N-types ($p = 0.037$, OR 0.596, CI 95% 0.367–0.968) and M-types ($p = 0.004$, OR 0.230, CI 95% 0.084–0.629). E-types also showed a higher percentage of beer drinkers than N-types ($p < 0.001$, OR 0.214, CI 95% 0.100–0.459) and M-types ($p < 0.001$, OR 0.401, CI 95% 0.258–0.621). Regarding wine consumption, E-types showed the highest percentage of drinkers ($p = 0.001$, OR 0.289, CI 95% 0.135–0.619, and $p = 0.006$, OR 0.541, CI 95% 0.348–0.838; E- vs. N- and M-types respectively). Moreover, E-types showed a higher percent of alcohol drinkers than N-types ($p < 0.001$, OR 0.146, CI 95% 0.054–0.395) and M-types ($p < 0.001$, OR 0.458, CI 95% 0.290–0.721) (Table 2).

Moreover, we observed a combined effect of CT and sex on AUED variable (F: 3.185, df: 2, $p = 0.042$, $\eta p^2 = 0.012$). Only in E-type groups we found a statistically significant difference between females and males ($p = 0.05$ d = 0.2) (Table 3).

Table 2. Comparisons of physical activity, sleep, eating habits, and use of electronic devices, and percentage of smokers and drinkers between the three chronotypes.

	M-Types	N-Types	E-Types
GSL-TPAQ	56.0 ± 9.7	51.4 ± 2.6	42.6 ± 2.9
PSQI	4.3 ± 0.3 *	4.6 ± 0.1 $^{\circ}$	6.0 ± 0.3 *$^{\circ}$
KIDMED	6.7 ± 0.6 $^{+\#}$	5.1 ± 0.3 $^{+}$	4.32 ± 0.5 $^{\#}$
AUED	5.2 ± 0.4	7.8 ± 0.8	7.6 ± 1.1
SMOKERS	8.9% ^{a}	20.3% ^{b}	29.9% ^{ab}
BEER DRINKERS	19.6% ^{c}	31.4% ^{d}	53.3% ^{cd}
WINE DRINKERS	19.6% ^{e}	31.4% ^{f}	45.8% ^{ef}
ALCOHOL DRINKERS	8.9% ^{g}	23.5% ^{h}	40.2% ^{gh}

Data are reported as mean ± standard error or percentage. Superscript symbols correspond to statistically significant differences between the three groups: * $p = 0.006$, $^{\circ}$ $p < 0.001$, $^{+}$ $p = 0.05$, $^{\#}$ $p = 0.006$, ^{a} $p = 0.004$, ^{b} $p = 0.037$, ^{c} $p < 0.001$, ^{d} $p < 0.001$, ^{e} $p = 0.006$, ^{f} $p = 0.001$, ^{g} $p < 0.001$, ^{h} $p < 0.001$. M-types = Morning-types, N-types = Neither-types, E-types = Evening-types, GSL-TPAQ = Godin-Shephard Leisure Time Physical Activity Questionnaire, PSQI = Pittsburgh Sleep Quality Index, KIDMED = Mediterranean Diet Quality Index for Children and Adolescents questionnaire, AUED = amount of use of electronic devices h/day.

Table 3. Results of the three-way ANOVA concerning the combined effect of CT and sex on AUED.

	M-Types		N-Types		E-Types	
	Females	Males	Females	Males	Females	Males
AUED	5.0 ± 0.4	5.8 ± 1.1	9.0 ± 1.3	5.9 ± 0.2	6.7 ± 0.4 *	9.1 ± 3.1 *

Data are reported as mean ± standard error. Superscript symbols correspond to statistically significant differences between the two groups: * $p = 0.05$. M-types = Morning-types, N-types = Neither-types, E-types = Evening-types, AUED = amount of use of electronic devices h/day.

Sex variables did not show other statistically significant interactions or main effects. Sex logistic regression analyses showed a statistically significant relationship between sex and beer ($p < 0.001$, OR 0.365, CI 95% 0.252–0.529) and between sex and wine ($p = 0.027$, OR 0.659, CI 95% 0.455–0.954), displaying a lower percentage of drinkers among females. (Table 4).

Table 4. Comparisons of physical activity, sleep, eating habits, and use of electronic devices in females and males.

	Females	Males
GSL-TPAQ	48.5 ± 3.2	53.0 ± 2.1
PSQI	5.1 ± 0.2	4.4 ± 0.2
KIDMED	4.9 ± 0.3	5.5 ± 0.4
AUED	8.0 ± 0.8	6.5 ± 0.6
SMOKERS	21.5%	20.2%
BEER DRINKERS	26.6% *	49.0% *
WINE DRINKERS	29.6% $^{\#}$	38.9% $^{\#}$
ALCOHOL DRINKERS	23.6%	28.3%

Data are reported as mean ± standard error or percentage. Superscript symbols correspond to statistically significant differences between the two groups: * $p < 0.001$, $^{\#}$ $p = 0.027$. GSL-TPAQ = Godin-Shephard Leisure Time Physical Activity Questionnaire, PSQI = Pittsburgh Sleep Quality Index, KIDMED = Mediterranean Diet Quality Index for Children and Adolescents questionnaire, AUED = amount of use of electronic devices h/day.

4. Discussion

The present study aimed at evaluating the physical activity, sleep, and eating behaviors in Italian university students during the COVID-19 pandemic, also considering important factors not yet sufficiently studied, such as the degree course attended and the CT. The key findings of the study highlights how attending a specific degree course, as well as belonging to a definite chronotype, can expose subjects to a different lifestyle. Sdc were more active, slept better, showed higher adherence to the Mediterranean diet, and smoked and drank less than Ndc students. Referring to the CT, E-types showed a bad lifestyle

compared to the other CTs. Indeed, they showed a worse sleep, a lower Mediterranean diet adherence, and smoked and drank more than N-types and M-types. We also found a large use of electronic devices during the lockdown (>6 h/day), for which CT and sex showed a combined effect. In the E-type groups, females showed lower use of electronic devices then males.

As the structure of the lessons or the internship and the experiences that derive from each degree course can expose students to different daily habits, the novelty of this study was to consider the possible impact of the degree course on students' lifestyle during the COVID-19 pandemic. The dual influence of CT and degree courses attended on the subjects' lifestyle could be explained by some considerations.

On the one hand, as might be expected, given its nature and daily university commitments, Sdc is a generally very active student population. Indeed, they practice many sports, and the many university courses they attend are practical and oriented towards well-being. The degree course is focused on the study of the cornerstones that characterize a correct lifestyle. By contrast, Ndc students often spend much time on work and less on activities oriented to psychophysical well-being, exposing them to a different lifestyle. On the other hand, it must also be taken into account that E-type students, compared to other CTs, are more prone to misbehavior, often related to their propensity to be at odds with social commitments. Even in challenging and particular situations, such as the lockdown, these findings demonstrate that physical activity, sleep and nutrition are all interrelated factors that influence well-being. It is well documented that high levels of physical activity, good sleep, and correct eating behaviors are important factors in decreasing health risk, especially during the restrictions due to the COVID-19 pandemic [52–55].

4.1. The Influence of Degree Courses on Students' Lifestyle

Sdc were more active, slept better, showed higher adherence to the Mediterranean diet, and smoked and drank less than Ndc students. These results are in agreement with those of Gallè et al. [19] and Munoz-Rodriguez et al. [20]. Authors showed that students attending healthcare-related or non-biomedical degree courses displayed lower physical activity levels, higher sitting time, lower regularity in the intake of meals and in the consumption of colored vegetables and fruits, and higher drinkers and smokers compared to non-healthcare-related or biomedical degree course students. Although both groups had a medium adherence to the Mediterranean diet, we showed better-eating behaviors in the Sdc compared to Ndc. These findings agree with the results shown by Rodríguez-Pérez et al. [56] and Taeyman et al. [57]. The former found that Spanish people had a good Mediterranean diet adherence during the COVID-19 confinement, while the latter showed that 82% of subjects had medium or higher adherence to the Mediterranean diet.

4.2. The Influence of CT on Students' Lifestyle

The results of the present study also showed differences in the behavior of sleep, eating, smoking, and alcohol consumption in the three CTs, with E-types being more prone to bad habits than other CTs. E-types had lower Mediterranean diet adherence than M-types and worse sleep compared to M- and N-types. Moreover, E-type was the only CT to be identified as a bad sleeper, as shown by PSQI score higher than 5. E-types also displayed a higher prevalence of smokers and drinkers than the other two chronotypes. Several studies showed as E-types have more risk of developing diseases [29–34,58], due to their propensity to adopt unhealthy behaviors. Other studies reported that E-types showed worse sleep, nutrition, and sedentary habits compared to N- and M-types [59–65]. Despite this, there are few studies that have investigated the different lifestyle linked to belonging to the different chronotypes during the lockdown. Yavuz and Altinsoy [66] reported a high prevalence of night eating disorders in E-types students compared to M- and N-types during the lockdown. Referring to sleep, studies in the literature only focused on the effect of lockdown on possible circadian shift and sleep quality differences between pre and during lockdown [67–69]. The COVID-19 pandemic led to delayed bed and wake-up

times, sometimes associated to a longer sleep duration, and shifted chronotype toward eveningness. The shift was greater the younger the subjects were. Adults also adapted their waking and working hours better to their biological rhythm than young people. In agreement with the results of Renziehausen and Fukuda [70], we found no differences in physical activity levels between chronotypes.

Based on our results and the scant scientific evidence, we can hypothesize that the lockdown may have determined a double effect, positive and negative, on the lifestyle differences in the three chronotypes. While on the one hand the E-types could have filled their chrono-synchronization gap by exploiting the home-confinement period and the greatly reduced influence of social commitments, on the other hand it must be considered that some factors, such as the constantly present university commitments, stress, anxiety, and fear, may have countered this.

4.3. The Use of Electronic Devices: Another Bad Behaviour That Increased during the COVID-19 Pandemic

In addition to previous lifestyle changes, an increased use of electronic devices was found during the COVID-19 pandemic. Schultz and Parikh [71] showed an increase in the total messaging and the time spent on social networks by 50% and 70%, respectively, as well as an increase in video calls during the lockdown. Compared to the pre-COVID-19 period, people spent more time on smartphones and computers and watching television, which are habits affecting sleep, especially when they were used before going to bed [72,73]. Our results showed a large use of electronic devices during the lockdown (>6 h/day). In particular, we found statistically significant differences between the two sexes, only in E-types groups, with >6 h/day and >9 h/day in females and males, respectively. Regarding the two degree courses, there were differences, albeit not statistically significant, between Sdc and Ndc, with almost 6 h/day for Sdc and 9 h/day for Ndc. Prolonged screen time watching may potentially have implications for physical and mental well-being [74,75].

The strengths of the present study are the large sample size and having analyzed the lifestyle habits of university students considering multiple factors that can have a synchronous effect on the quality of life. Another important strength is the evaluation of the relationship between the CTs or degree courses and the aforementioned variables. Conversely, the limitations of the study are the lack of objective sleep and physical activity evaluations, as well as the psycho-emotional status of participants. Another limitation of the study is the lack of a pre-COVID-19 lockdown lifestyle assessment that could have helped to better understand the real impact of the pandemic on student lifestyles. Future prospects are to study how the lifestyle, in the same population, could change during the post-COVID-19 lockdown period.

5. Conclusions

The COVID-19 pandemic and related restrictions have changed our daily lives, resulting in an increase in unhealthy behaviors. A good level of physical activity, proper nutrition, and adequate sleep are important factors for pursuing a healthy lifestyle and reducing the risk of developing diseases. It is necessary to find good strategies to maintain a correct lifestyle even in this unusual condition, especially for at-risk populations, such as college students, and particularly E-types.

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