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Article

Eating Behavior and Chronic Stress in a Post-Pandemic Context Study with Portuguese Young People Aged 15–26 Years

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Abstract: The eating behaviors of young people underwent substantial changes due to the COVID-19 pandemic. This study addresses the understanding of pandemic impacts on perceived psychological and physical well-being exploring the connection between self-perceived eating behavior quality and chronic stress. A sample of Portuguese young people aged 15-26 years (N=951), completed a self-report questionnaire assessing socio-demographic data, perception of eating quality behavior, appetite, stress, well-being and optimism. The results reveal gender differences, with males scoring higher in well-being and optimism, while females exhibit elevated appetite and chronic stress scores, and also reveals negative links between age group and eating quality and chronic stress, and positive links between eating quality and well-being. Well-being emerges as a significant predictor of stress in middle and oldest young adults that maintain or increase quality of eating behaviors, while optimism plays a paradoxical role in predicting higher stress in younger adults with reduced eating quality. These results emphasize the need to consider eating behaviors and stress among young adults as an investment in global public health, given the significant representation of young adults in the population, to mitigate long-term health risks. Effectively reducing detrimental eating behaviors and stress in these demographic groups can enhance overall well-being and longevity.

Keywords: eating behavior; stress; young people; pos-pandemic context; well-being

1. Introduction

The COVID-19 pandemic significantly impacted the eating behaviors of young people. Social isolation, induced by lockdowns and social distancing measures, heightened stress and uncertainty, potentially influencing students' eating behaviors. Changes in routine and lifestyle [1], along with financial strain, disrupted daily schedules and influenced dietary choices. Limited physical activity due to the closure of gyms and restrictions on outdoor activities affected metabolism and energy balance, contributing to potential changes in weight and eating behaviors [2,3]. Remote learning challenges, such as stress-related eating and irregular meal patterns, were exacerbated by increased screen time. Some students embraced healthier eating behaviors, cooking at home, and incorporating nutritious foods, while others turned to comfort foods. Financial challenges affected access to affordable and nutritious food. The closure of gyms and online classes impacted overall physical activity. The pandemic prompted heightened awareness of health and well-being [4].

With all these changes and their impact on young people, it is important to study it in the post-pandemic phase. In this paper, we propose to study the self-perception of eating behaviors quality and chronic stress in a post-pandemic context in Portuguese young people aged 15-26 years and its relationships with well-being across life-span.

1.1. Literature Review

Results from several studies revealed a positive relationship between depression, anxiety, stress and unhealthy eating behaviors (uncontrolled eating, emotional eating, and cognitive restraint). If a

person is experiencing depression or low mood it is more likely that his eating behavior because of low mood is going to affect [5]. For example, Ramón Arbués et al. (2019) found a notable correlation between unfavorable dietary behaviors and elevated levels of anxiety, depression, and stress [6]. Emotional eating stands out as a significant eating concern, representing a disorder where individuals exhibit a proclivity to overindulge in response to negative emotions. Those most vulnerable to this behavior encompass individuals grappling with obesity, adolescents, and children. Emotional eating can be set in motion by diverse emotional states such as stress, anxiety, depression, parental influence, anger, and even joy [7]. The dietary practices individuals adopt are modeled by the cultural milieu in which they reside. This can result in the development of unfavorable eating behaviors, such as mindless eating, unbalanced dietary choices, hurried consumption, or eating hastily due to time constraints. These patterns have the potential to pave the way for eating disorders, emphasizing the imperative for a holistic approach that encompasses physical, spiritual, and social dimensions [8,9].

Young people's lives are characterized by a multitude of challenges that require significant adaptation, encompassing academic, social, and financial dimensions [10]. The transition from secondary education to university is particularly demanding, marked by increased competition, pressure for academic achievements [11], changes in workload and support networks, and the potential for risky behaviors due to separation from family [12]. This transition often induces stress, anxiety, depression, or insomnia [13,14]. Persistent exposure to psychosocial stressors over extended periods affects university students emotionally and intellectually more intensely than students in other grades [15]. Research underscores the prevalence of poor psychological well-being among university students [16].

Studies developed during the COVID-19 pandemic, such as that conducted by Berge et al. (2021) have emerged into the intricate connections between lifestyle factors and mental well-being and revealed that increased family/shared meal frequency was associated with healthier home food availability, elevated consumption of fruits and vegetables, and enhanced emotional well-being, including reduced depressive symptoms and stress [17]. Otherwise, studies developed in the field of development across life-span shows that young adults in university settings prioritize academic success over health and well-being [18]. Mascherini et al., (2021) points out a decline in psychological well-being, heightened sedentary behaviors, and altered eating behaviors during the pandemic, indicative of a comprehensive deterioration across various well-being domains [19]. In summary it looks like that well-being emerges as a dynamic concept across the lifespan [20], with fluctuations occurring through different developmental phases and in strictly interaction with contexts. Highlighted a dual trend in affect intensity, where the ambivalence of life changes in young adulthood contributed to a decrease in positive affect, while factors such as perceived control, financial stability, and overall good health led to a decrease in negative affect, supporting the concept of decreasing affect intensity throughout the lifespan [20].

On the other hand, optimism emerges as a crucial factor in fostering academic success and enhancing overall psychological well-being for students [21]. It plays a significant role in adapting to adverse life events [22-24].

Stress, a ubiquitous aspect of student life, has both physical and psychological consequences. Chronic exposure weakens the immune system, predisposing individuals to chronic and infectious diseases [25]. Managing academic-related stressors, in addition to non-academic stressors, can cumulatively impact young people. While optimism has been linked to better overall diet quality and increased consumption of nutritious food groups [26,27], conflicting theories suggest that optimists may not adopt healthy behaviors due to a positive mindset [28]. Surprisingly, dispositional optimism has been associated with higher alcohol consumption [29].

1.2. Pos-Lockdown Changes

In the post-lockdown period in Portugal, the population gradually returned to their workplaces, but still with great care. It was a period when wearing masks in public spaces was compulsory, as was physical distancing. With these restrictions, a large part of the population stopped eating in

restaurants and ate more food from home. On the other hand, with the continuation of some online classes, many students stopped going to university canteens, which also had an impact on their diet [30,31].

Given the heightened global interest in evaluating the consequences of the pandemic in physical and psychological health, this study aims to delineate the association between self-perception of the quality of eating behaviors and chronic stress in Portuguese young individuals aged 15-26 in a post-pandemic context. Additionally, it seeks to explore the relationships between these factors and overall well-being across the lifespan. The investigation specifically searched into the interactions among perceived quality of eating behaviors, stress levels, well-being, optimism, and age. The study derives its insights from a diverse sample of young adults representing all regions of Portugal.

2. Materials and Methods

2.1. Sample

Participants in this study were Portuguese young people aged 15-26 years. A convenient and nonprobability sampling approach was employed, utilizing online dissemination and an electronic platform for data collection due to their accessibility. The participants were drawn from a larger Portuguese population, specifically 830317 [32] young people aged from 15 to 26 years. The sample consisted of 951 participants, 1.15% of the population, comprising 364 (38.28%) from secondary school and 587 (61.72%) from higher education. A total of 698 girls (73.40%) took part in the study, the gender distribution of each age group can be seen in Table 1. All the participants in the study live in Portugal and are spread across all the geographical regions of mainland Portugal and the islands (North = 5.00%; Center = 57.70%; South = 29.50%; Islands = 5.30%).

Regarding sports participation, 53.5% of the respondents reported engaging in sports. Among them, 10.6% mentioned dedicating 3 hours per week to sports, 9.1% allocated 2 hours weekly, and 7.8% indicated a commitment of 1 hour per week. In terms of internet usage, 13.2% stated that they spent 5 hours daily online, 12.5% allocated 6 hours per day, and 12.2% reported using the internet for 8 hours each day. Concerning dietary behaviors, 43.6% of the participants disclosed consuming an average of four meals per day.

A comparison was made between participants in terms of gender, and age, and it was observed that there were differences concerning gender [$F(1, 949) = 45.585, p < .001$] and age [$F(11, 939) = 2.057, p < .021$] (Table 1).

Table 1. Participants.

Variables	Age Group	Mean	SD	N (%)
Females	Age Group 1	16.930	.900	282 (29.65%)
	Age Group 2	20.620	1.118	309 (32.49%)
	Age Group 3	23.640	.905	107 (11.25%)
Males	Age Group 1	16.920	.840	105 (11.04%)
	Age Group 2	20.750	.969	89 (9.36%)
	Age Group 3	23.920	1.103	59 (6.21%)
Total		19.670	2.709	951 (100%)

Based on these statistical results we organize the sample in age groups and three groups were defined:

1. Group 1 (G1): 15 to 18 years (N =387; M = 16.930; SD=.883);
2. Group 2 (G2): 19 to 22 years (N = 398; M = 20.650; SD=1.086);
3. Group 3 (G3): 23 to 26 years (N = 166; M = 23.730; SD=.986).

With regard to the household, for Group 1 there is a median of 4 members in the household while in Groups 2 and 3 the median for the number of household members is 3.

2.2. Instruments

The main research tool combines Psychosocial and Socio-demographic tools, as we explain below.

The Sociodemographic Questionnaire, designed specifically for this study, aims to gather essential information for characterizing the sample, encompassing details such as age, gender, parental educational background, family composition, parental occupations, place of residence, current course of study, and academic year. Responses to questions 1 through 5 were dichotomized into yes or no, while questions 6 and 7 required numerical input.

Additionally, the Guerra (2004) Lifestyle Checklist was integrated, featuring inquiries about, for example, meal frequency and dietary alterations. Some examples of questions are: "1) Has your diet changed?" [33]. Based on the questions in this checklist, a Self-Perception of Eating behaviors Quality index was created, and characterize the perception oh each participant about the quality of its eating consummation in the present compared to the quality of their eating behaviors before the pandemic. The Index was organized in three levels, 0 (lower quality), 1 (same quality) and 2 (higher quality). Following we will use the "Eating Quality" to named this variable.

The Chronic Stress Test, as conceptualized by Reschke in 2011 [34], comprises seven items to be answered on a four-point scale, ranging from "Not Applicable" (1) to "Applies Completely" (4). Its primary objective is to gauge the subjective intensity of stress experienced by the participant. These items pertain to various stress-inducing factors categorized under themes such as loss of control, loss of meaning, anger or dissatisfaction, ability to rest, and concerns of a personal nature or related to social support. Example of items: "I feel happy". The participant can achieve a maximum score of 28, indicative of the highest perceived stress level. In its original version, the test exhibited a robust test-retest validity coefficient of 0.812 and a commendable Cronbach's alpha of 0.743.

Well-being was measured using a General Index of Well-being. That index results from a combination of twenty items taken from the Well-being Manifestation Measure Scale (adaptation by Monteiro et al., 2012, of the original from Massé et al., 1998) [35], ranging from none of the time to all of the time, rated on a 5-point Likert-type intensity scale. The total score of psychological well-being is calculated by summing the scores obtained in the ten items, ranging from zero (0) to fifty (100). We used 20 items that explain 48% of the variance. The reliability of the scale was assessed using Cronbach's alpha (0.952).

The optimism scale was constructed in 1998 by José de Barros de Oliveira. It is a single-item Likert scale. The instrument consists of 4 items and answers are given by choosing a number from 1 (absolutely not) to 5 (absolutely yes). The level of optimism obtained is the sum of the values for each item, so it is safe to say that the higher the number in the sum, the higher the level of optimism in a maximum of 20 values [36]. With regard to psychometric aspects, the internal consistency of this scale shows a Cronbach's alpha of .75, making it an instrument with good internal consistency.) For our sample, we found an internal consistency of the scale of .915 and the factor analysis identified a single-factor solution that explains 80.108 % of the total variance.

2.3. Procedure/Ethics Approval

This research is a component of the broader initiative titled 'Health Cube – Survey – Coronavirus COVID-19, and it constitutes also a component of the broader initiative named RED-University of Évora. The undertaking is under the coordination of DPFA-Academy of Work and Health, and it has been reviewed and approved by its Ethical Committee from both institutions. To commence the study, approvals were obtained from the Portuguese Commission for Data Protection. The current electronic survey adheres to the recommendations for enhancing the quality of web surveys as outlined in the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) [37].

The final survey was distributed via email and various social media platforms (Facebook, Twitter, WhatsApp, and Instagram) during the post-lockdown periods in Portugal. The survey instrument included an information sheet and a consent form, both available in both languages, presented on the initial page of the questionnaire. Participants had the autonomy to withdraw from the survey at any point without providing reasons, and no personal identification was requested to ensure confidentiality. No incentives were offered to participants for completing the questionnaire.

The collected responses were downloaded as an Excel file and securely stored in a protected database. The present study adhered to the ethical code for web-based research by Franzke and coworkers (2019) and aligned with the principles of the Declaration of Helsinki of the World Medical Association [38,39].

To establish the database, each questionnaire received via the Google Docs platform was downloaded and converted into an SPSS Statistics data file (version 28). The subsequent data analysis was conducted using the SPSS software, which stands for Statistical Package for the Social Sciences.

2.4. Data Analysis

The analyses of pandemic impacts on perceived psychological and physical well-being and the connection between self-perceived eating behavior quality and chronic stress of Portuguese young people aged 15-26 years, combine different statistical analysis.

First, a descriptive statistic was employed, dividing the sample into age groups based on statistical and theoretical criteria to comprehend data across the lifespan. Three groups were defined: Group 1 (G1): 15 to 18 years; Group 2 (G2): 19 to 22 years; Group 3 (G3): 23 to 26 years (see Table 1).

The analysis included means, standard deviations, and intercorrelations (using Pearson's r or Spearman's ρ depending on the variable's scale) for the study variables across the entire sample. Differences between groups (in terms of sex and age) were explored through analysis of variance. Effect size estimation [40] and post-hoc analysis with the Tukey test [41] were employed. Correlation strength was classified according to Cohen's criteria [42], where a Pearson correlation value of 0.10–0.29 is considered small, 0.30–0.49 is medium, and 0.50–1.00 is high.

Subsequently, stepwise multiple linear regressions were performed to establish a multivariate model predicting the influence of age group, chronic stress, well-being, and optimism on eating quality. Standardized versions of the regression coefficients (β -values) were used to measure the unique explanatory power of the independent variables relative to each other [41].

This analytical procedure was repeated for the three levels of eating quality (Low, Equal, High) to assess the stability of both the correlations and the predictive model across each level. For all multiple linear regressions, the independence of residuals was verified using the Durbin–Watson statistic, while homoscedasticity was confirmed through visual inspection of plots. The absence of multicollinearity was ensured by tolerance values greater than 0.2. Tests were conducted to identify outliers, high leverage points, or highly influential points, and regressions were recalculated after eliminating extreme cases. The assumption of normality was assessed through Q-Q plots for each school term. All statistical procedures and tests were performed using the IBM SPSS Statistics 28 software package.

3. Results

3.1. Differences Between Groups.

To explore distinctions between female and male participant groups, we conducted an analysis of variance as outlined in Table 2.

Table 2. Differences in groups by gender.

Variables	Gender		F	p	Eta ²	Tukey test
	Females (Fe) M (SD)	Males (Ma) M (SD)				
Appetite	2.020 (.262)	2.000 (.218)	1.187	.276	.001	Ma<Fe
Eating Quality	1.090 (.400)	1.090 (.322)	.014	.906	.000	Ma=Fe
Wellbeing	81.640 (16.918)	90.198 (18.271)	45.505	<.001	.046	Ma>Fe
Chronic Stress	17.033 (4.853)	14.660 (4.608)	45.585	<.001	.046	Ma<Fe
Optimism	13.741 (3.620)	14.856 (3.679)	17.442	<.001	.018	Ma>Fe

N = 951. Df=1; *p<.001, *p<.050

The findings from this analysis highlight noteworthy significant differences between female and male individuals across multiple dimensions, encompassing well-being [$F(1, 950) = 45.505, p = <.001, d = .046$], chronic stress [$F(1, 950) = 45.585, p = <.001, d = .046$], and optimism [$F(1, 950) = 17.442, p = <.001, d = .018$]. These differences have a small effect size, with the wellbeing and chronic stress variables having the highest effect sizes ($d = .46$) (Table 2). For eating behaviors and appetite the differences are not statistically significant. Following we analyze the post-hoc test to refine the understanding of statistical differences found. This analysis were conducted through the Tukey test (Table 2), reveals that male participants exhibit elevated scores in well-being ($M=90.198$) and optimism ($M=13.741$) than females ($M= 81.640; M= 14.856$, respectively). Additionally, this analysis indicates that female participants demonstrate higher scores in appetite ($M=2.020$) and chronic stress ($M=17.033$) when compared with males ($M=2.000; M=14.660$, respectively). In terms of eating quality, the Tukey test indicates the same scores between male and female participants ($M=1.090$).

To explore distinctions between the age groups, we analyzed variance as outlined in Table 3. The findings from this analysis highlight significant differences between age groups across multiple dimensions, including eating quality [$F(1, 950) = 4.082, p = .017; d = .009$], well-being [$F(1, 950) = 6.701, p = .001; d = .014$], chronic stress [$F(1, 950) = 9.878, p = <.001; d = .020$] and optimism [$F(1, 951) = 7.051, p = <.001; d = .015$]. These differences have a small effect size, with the chronic stress variable having the highest effect size ($d = .020$) (Table 3).

Table 3. Differences in groups by age group.

Variables	Age Group (G)			F	p	Eta ²	Tukey Test
	G1 M (SD)	G2 M (SD)	G3 M (SD)				
Appetite	2.010 (.274)	2.020 (.240)	2.02 (.219)	.291	.748	.001	-
Eating Quality	1.130 (.467)	1.060 (.327)	1.06 (.239)	4.082	.017	.009	G1>G2
Wellbeing	84,762 (18.537)	81.687 (16.826)	87,289 (17.064)	6.701	.001	.014	G1>G2; G3>G2
Chronic Stress	16.969 (5.030)	16.447 (4.845)	14.970 (4.445)	9.878	<.001	.020	G1>G3; G2>G3
Optimism	14.214 (3.937)	13.565 (3.439)	14.759 (3.403)	7.051	<.001	.015	G1>G2; G2<G3

N = 951. Df=2; *p≤.001, *p≤.05

The post-hoc analysis, employing the Tukey test (Table 3), indicates that G1 ($M = 1.130$) exhibits superior eating quality compared to G2 ($M = 1.060$). In terms of well-being, the results show higher scores for G1 ($M = 84,762$) than G2 ($M = 81.687$) and higher scores for G3 ($M = 87,289$) than for G2 ($M = 81.687$). For chronic stress, the test reveals elevated stress scores for G1 ($M = 16.969$) compared to G2 ($M = 16.447$) and higher stress scores for G2 ($M = 16.447$) than for G3 ($M = 14.970$). Regarding optimism, G1 ($M = 14.214$) demonstrates higher scores than G2 ($M = 13.565$), and G3 ($M = 14.759$) has higher scores than G2 ($M = 13.565$).

3.2. Correlations among variables

We conducted an analysis of eating quality, appetite, well-being, chronic stress and optimism in the post-lockdown Portuguese student population during the COVID-19 pandemic, employing descriptive statistics. Initially, the sample was stratified into age groups, employing both statistical and theoretical criteria to provide a comprehensive understanding of data throughout the lifespan. Three distinct groups were established: G1 (15 to 18 years), G2 (19 to 22 years), and G3 (23 to 26 years).

Subsequently, we examined the means, standard deviations, and intercorrelations of the study variables across the entire sample, utilizing Pearson's r or Spearman's ρ based on the scale of the variable. To explore group differences related to gender and age, an analysis of variance was conducted.

3.2.1. Correlations among variables and rationale for regression models

The intercorrelations (Pearson's r or Spearman's ρ depending on the variable's scale) were then analysed for the study variables on the entire sample. Age group was found to have significant negative relationships with the eating quality and the chronic stress variables. We also found a positive significant correlation between eating quality and well-being. In turn, well-being shows significant positive correlations with optimism and a negative and significant correlation with chronic stress (Table 4).

Table 4. Correlation among study variables.

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age Group	1								
2. Appetite	.025	1							
3. Eating Quality	-.081*	-.058	1						
4. Wellbeing	.019	.013	.088**	1					
5. Chronic Stress	-.135**	-.007	-.001	-.538**	1				
6. Optimism	.020	.022	.059	.754**	-.426**	1			
7. Daily meals	.053	.021	.013	.056	-.020	.048	1		
8. Weekly sports hours	-.068	.016	.064	.191**	-.052	.173**	.028	1	
9. Daily internet hours	.011	.005	-.012	-.036	.019	-.025	-.007	-.038	1

*. The correlation is significant at the 0.05 level (2 ends).
 **. The correlation is significant at the 0.01 level (2 ends).

A multiple linear regression analysis of variance was performed to understand the impact of the independent variables (well-being, optimism and age group) in stress, for the three eating quality groups (Table 5).

Table 5. Summary of stepwise multiple regression analysis predicting stress by levels of Perceived Eating Quality Groups.

Dependent Variable	Predictor variables	β	t	p	Adjusted R^2	F	P
Perceived eating quality - Low (N=30)	Optimism	-.689	-5.031	<.001	.456	25.315	<.001
Perceived eating quality - Same (N=806)	Well-being	-.522	-17.491	<.001	.273	302.721	<.001
	Age Group	-.100	-3.350	<.001	.282	158.899	<.001
Perceived eating quality - High (N=115)	Well-being	-.624	-8.488	<.001	.384	72.043	<.001

In the group that perceives a decrease in the quality of eating behaviour, stress is negatively predicted by optimism, that model explains 45.5% of the variance of lower level of eating quality. In other words, the more intense the stress, the lower the optimism and the worse the eating quality.

In the group that maintained the quality of their pre-pandemic eating behaviours, the variables that predicted stress were well-being and age group, explaining 28.2% of the variance (27.3% and 0.9%, respectively). This could mean that younger individuals who consider that there have been no changes in their eating behaviour show higher levels of well-being. Well-being and age are predictors of stress, and when we analyzed Tables 5 and 6 together, it was found that age group 2 (age 19-22) expressed a low level of well-being when compared with groups 1 and 3, showing fluctuations in wellbeing across the life span of young people.

In the group that perceived that their eating behaviour had improved, the data show a model when the predictor of stress was well-being (explaining 39.6% of the variance), meaning that lower

levels of stress are associated with higher levels of well-being and a better perception of the quality of their own eating behaviours.

In summary, wellbeing is an important predictor of stress for all the levels of perception of eating behaviour

4. Discussion and Conclusions

In light of the global interest in assessing the repercussions of the pandemic impacts on perceived psychological and physical well-being exploring the connection between self-perceived eating behavior quality and chronic stress, this study proposed to explore the connection between self-perceived quality of eating behaviors and chronic stress among Portuguese individuals aged 15-26 in a post-pandemic context. Additionally, the relationships among these factors and overall well-being throughout the lifespan was explored, namely the interplay between perceived quality of eating behaviors, stress levels, well-being, optimism, and age.

The main results display differences between female and male participant groups across dimensions such as well-being, chronic stress, and optimism, revealing notable distinctions with small effect sizes. Males tend to score higher in well-being and optimism, while females exhibit elevated appetite and chronic stress scores. Importantly, there are no statistically significant differences in eating behaviors and appetite, which is in line with Ramón Arbués et al. (2019)[6].

The analysis of age group differences, uncovering significant variations in eating quality, well-being, chronic stress, and optimism among different age groups. Post-hoc tests reveal nuanced differences, with G1 (15-18 years) displaying superior scores in eating quality, well-being, and optimism, while G2 (19-22 years) exhibits fluctuations in well-being that impact stress levels. These results are in accordance with other studies as, for example, Mascherini et al.'s (2021) discovery of a decline in psychological well-being, increased sedentary behaviors, and altered eating behaviors during the pandemic, indicative of a comprehensive deterioration across various well-being domains, revealing the intricate and varied impacts on well-being across different age groups during challenging times [19].

Correlations among variables in the entire sample highlight meaningful relationships, including negative associations between age group and eating quality and chronic stress. Positive links are observed between eating quality and well-being. Such results are in line with the work of Buecker et al. that demonstrate a disruption between positive and negative affect across lifespan, negative affect tended to increase during adolescence and early adulthood, and decline after 22 years of age [20].

To finalize regression analysis demonstrates a model of predictors that improves the understand of the impact of well-being, optimism and age in stress, for the three eating quality groups. Points to the pivotal role of optimism for low eating quality level, suggesting that the more optimistic young people aged 15-18, also reveals a decrease of quality in eating behaviors, as if optimism is not a protective factor of eating behavior, but by the contrary a risk feature [28]. Another interesting issue, is that for young people with high level of eating quality behavior well-being constitutes an important predictor of stress levels.

In individuals who maintained the quality of their eating behaviors from before the pandemic, stress was predicted by well-being and age. This suggests that younger individuals perceiving no changes in their eating behavior tend to exhibit higher levels of well-being. Young adults aged 19-22 years, expressed lower well-being compared to young adults aged 15-18 years and older group aged 23-26, indicating fluctuations in well-being across the lifespan of young people. For those who perceived an improvement in their eating behavior, the data indicated a model where well-being served as the predictor of stress. This implies that lower stress levels are associated with higher well-being and a positive perception of the quality of their eating behaviors [20].

In summary, well-being emerges as a significant predictor of stress across different levels of perceived eating behavior quality in middle and oldest young adults (aged 19-22 and 23 -26 years), otherwise optimism seems to play an important role in younger adults, predicting higher levels of stress in individuals that perceived a reduction of quality in its eating behavior. Discussion of the

potential health consequences of altered eating behaviors in the post-pandemic period, suggesting that optimists younger people may not adopt healthy behaviors due to a positive mindset [28].

To conclude we highlight that examining and addressing the repercussions of unhealthy eating behaviors and stress among young adults is imperative for global public health. Given that young adults represent a significant segment of the population, their engagement in unhealthy dietary behaviors and exposure to stress carries potential long-term health consequences. These behaviors notably amplify the risk of noncommunicable diseases, including cancer and cardiovascular conditions [18].

Effectively managing and diminishing these specific unhealthy lifestyle patterns becomes crucial in alleviating the burden of noncommunicable diseases. A reduction in the prevalence of detrimental eating behaviors and stress among young adults offers a substantial opportunity to mitigate associated health risks, contributing to enhanced overall well-being and longevity.

Recognizing the widespread nature of these unhealthy behaviors among young adult populations globally, insights gleaned from studying these issues may have broader implications for global public health endeavors.

This study was conducted during a period of the COVID-19 pandemic, with great implications for the global population which results in some limitations. The data collected may also have some limitations, as it was collected via an online questionnaire, resulting in a convenience sample. On the other hand, the use of self-reported measures is conditioned by the effects of social desirability.

For future studies, it will be important to consider the consequences of fluctuations in well-being on young people's physical and psychological health to develop programs that promote healthy lifestyles. Programs that involve the development of quality eating behaviors, stress management and the promotion of well-being, promoting physical and psychological health as part of an overall health plan.

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Institutional Review Board Statement: This research is a component of the broader initiative titled 'Health Cube – Survey – Coronavirus COVID-19 (coordinate by DPFA-Academy of Work and Health), and it constitutes also a component of the broader initiative named RED-University of Évora. The undertaking is under the coordination of DPFA-Academy of Work and Health, and it has been reviewed and approved by its Ethical Committee from both institutions. To commence the study, approvals were obtained from the Portuguese Commission for Data Protection.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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Conflicts of Interest: The authors declare no conflict of interest.

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