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## Association between eating habits and quality of life among Chilean university students

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### ABSTRACT

**Objective:** To estimate the association between eating habits and quality of life (QOL) in Chilean university students. **Participants:** 1,212 students from the Universidad de La Frontera, Chile (mean age 18.7±2.15) were surveyed in January–March 2018. **Methods:** Participants completed a cross-sectional self-report survey to evaluate QOL using the WHOQOL-BREF scale and eating habits with a food habits survey. **Results:** Students reporting a better healthy eating habits score also presented a higher QOL. Eating breakfast and eating home-cooked meals is a protective factor for QOL in each domain. The consumption of sweet snacks was shown to be a risk factor for the physical health and environment domains. The consumption of fast food is shown as the greatest risk factor in the physical domain. **Conclusion:** Healthy and unhealthy eating habits are associated with different dimensions of QOL. University authorities should develop new policies to improve the QOL of the entire university community.

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breakfast; eating habits;  
quality of life;  
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### Introduction

Adolescence is a unique period in life, taking young adults from childhood to adulthood. The increase in risky behaviors during this life stage is of particular concern since it can lead to immediate negative health consequences and increase the risk of chronic disease later in life.<sup>1</sup> Thus, the shift from high school to college/university is a distinctive transition and a very challenging time in and of itself that can affect students' health status and quality of life (QOL).<sup>2</sup>

QOL is a construct defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.<sup>3</sup> In general, university students have several unhealthy behaviors, such as unhealthy eating habits, decreased physical activity, increased alcohol and marijuana intake, reduced sleep, and risky sexual behavior,<sup>2–4</sup> all of which impacts negatively on their QOL.<sup>1</sup>

Eating habits are individual and collective behaviors that influence the human relationship with food in sociocultural and environmental contexts.<sup>5</sup> These eating habits can be conceptualized as healthy when they follow national and

international dietary recommendations based on a varied and balanced diet, and unhealthy when foods high in critical nutrients, such as sugary drinks, snacks, fried foods and others, are consumed in excess, which has a negative effect on health.<sup>6</sup> University students are at a critical stage for the development of their eating habits, characterized by little time to eat, skipping meals frequently, eating between meals and a high consumption of ultra-processed food.<sup>7–9</sup> A recent multicenter study showed that university students have a high intake of unhealthy foods and tobacco, a highly sedentary lifestyle, insomnia, daytime drowsiness and an inadequate number of hours of sleep.<sup>10</sup>

The number of studies investigating the association between QOL and diet is limited. A systematic review performed on older adults showed that healthy dietary patterns were associated with better self-rated health and QOL, and adherence to healthy dietary patterns like the Mediterranean diet were significantly associated with an improvement in QOL.<sup>11</sup> In addition, the PREDIMED-Plus trial (Mediterranean diet & lifestyle clinical trial) showed a positive association between adherence to the Mediterranean diet and various dimensions of QOL.<sup>12</sup> Also, a current study on Brazilian students showed that inadequate eating attitude

reduces the QOL of health care students in all domains.<sup>13</sup> In Chile, there are no studies that have associated diet and quality of life in university students, and this topic may have a relevant application for public health purposes. Thus, this study aimed to estimate the association between eating habits and QOL in Chilean university students.

## Material and method

### Study design

A cross-sectional study was carried out with 1,212 first-year students enrolled in a Chilean university (56% of the population). In order to participate in the study, participants had to be 18 to 24 years old.

### College health survey

The data were collected through a self-applied questionnaire online. A link was sent to participants' emails and was available on the university's social networks, called the UFRO health survey 2018. The application was available between the registration period and start of classes (January to March) of 2018.

The sections of the questionnaire and definition of variables are described.

### Quality of life

The World Health Organization WHOQOL-BREF scale<sup>14,15</sup> is a short version of the WHOQOL-100.<sup>16</sup> In this 26-item instrument, participants must rate their response on a 5-point Likert scale, measuring four QOL domains: physical health, psychological health, social relationships and the environment. High scores indicate a high QOL.

The WHOQOL-BREF has shown excellent reliability and validity in previous studies.<sup>17,18</sup> In our study, the internal consistency was adequate, although for the social relationships domain, the coefficient was less than .70.

Scores range from 0 to 100, where a higher score means a better QOL. The 25th percentile (p25) was used as a cutoff point; scores  $\leq$  p25 were considered lower and  $>$  p25 as a higher score compared to previous studies.<sup>19,20</sup>

### Eating habits

To identify healthy and unhealthy eating habits, a food habits survey was used consisting of 15 items, which explore the consumption of different foods.

The survey measures eating habits with two domains of self-assessment. The first is composed of nine items with a minimum score of 1 and a maximum of 5 per question (Likert scale), which indicates the frequency of healthy eating habits ranging from no consumption (1 point) to the suggested daily/weekly serving (5 points) based on Chilean dietary guidelines and studies that have developed indicators to evaluate and categorize healthy and unhealthy eating. Responses are added together. Totals range from 9 to 45

points, with higher values representing better eating habits (breakfast, fruits, vegetables, legumes, dairy products, fish, whole-grain foods, home-cooked meals and dinner).

The second domain consists of six items, food or food groups identified as promoters of chronic non-communicable diseases or unhealthy habits (consumption of sugary drinks, alcohol, fried foods, fast food, snacks) and the sixth item is adding salt to meals without tasting them first. These domains consist of five questions with scoring similar to the first domain: 1 (no consumption) to 5 ( $>$  3 portion per day/week) or 1 to 3 (salt).<sup>21</sup> For example, 1: Do you consume sugary soda or juice? (1 portion: 200 cc glass) a) Do not consume b) less than once a day c) 1 portion per day d) 2 portions per day e)  $>$ 3 portions per day. Example 2, only for the salt case: Do you add salt to meals without tasting them first? a) do not add b) occasionally add c) always add. The total scores of the domains of healthy and unhealthy habits were transformed to scales of 1 to 100 points.

### Other covariates

- Sociodemographic data: age, gender, occupation and socioeconomic level (SEL)
- Body mass index (BMI; kg/mt<sup>2</sup>) This was determined from self-reported weight and height. The cutoff points for normal and overweight/obesity nutritional status was BMI  $\leq$ 24.9 kg/mt<sup>2</sup> and BMI  $>$ 25 kg/mt<sup>2</sup>, respectively.
- Sedentary lifestyle: Anyone sitting more than an average of 6 hours a day in the last 7 days was considered sedentary according to the question: In the last 7 days, how much time did you spend sitting on a weekday? on the International Physical Activity Questionnaire (IPAQ) short version.<sup>22</sup>
- Tobacco consumption: A "current smoker" was someone who reported smoking on at least 1 or 2 days in the past 30 days.<sup>23</sup>

### Ethical considerations

The study was conducted following the Declaration of Helsinki in regard to working with human subjects and approved by the Ethics Committee of the Universidad de La Frontera. All the students who signed the informed consent and completed the questionnaire were included in the study.

### Statistical analysis

The results are presented as averages and their standard deviation for continuous variables, and as percentages for categorical variables. To compare between groups, Chi-Square and Student's t-tests were used according to the level of measurement of the variables. Logistic regression models were used to analyze the effect of each eating habit (healthy and unhealthy) on the QOL domains, considering a higher QOL ( $>$  p25) as a reference group for students with a lower QOL ( $\leq$ p25). The results were presented as odds ratios and their respective 95% CI. The model was adjusted for gender, SEL, BMI, sedentary lifestyle and tobacco consumption,

**Table 1.** General characteristics of university students (n = 1,212).

Variables	
Age, Mean $\pm$ SD	18.7 $\pm$ 2.15
Gender, n (%)	
Female	698 (57.6)
Male	514 (42.4)
Socioeconomic level, n (%)	
Low	483 (40.0)
Medium	311 (25.7)
High	418 (34.3)
Body Mass Index (self-reported), n (%)	
BMI $\leq$ 25 kg/m <sup>2</sup>	822 (67.8)
BMI >25 kg/m <sup>2</sup>	364 (30.0)
Tobacco consumption, n (%)	
Last 30 days	901 (74.3)
Sedentary Lifestyle, n (%)	
>6 hours sitting per day	452 (37.3)

because they are potential confounders of the association between eating habits and QOL domains. The results were obtained with the software STATA 14.0.

## Results

### Participant characteristics

Of the registered students, 1,212 completed all assessments, 57.6% were women. The general characteristics of the sample are presented in Table 1. The reported scores were adequate to good with respect to the QOL domains. In fact, we observed a low prevalence of lower QOL in all domains (Table 2). In terms of eating habits, we found that scores ranged from normal to inadequate. It was observed that 48.8% and 26.2% of students have breakfast and dinner every day, respectively (Table 2). According to the recommendations of the Chilean Food Guide, we found a low consumption rate of daily portions of dairy products (4.3%) fruits (6.4%), legumes (25.8%) and vegetables (27.5%). Also, a low prevalence of fish consumption was noted (10.5%). On the other hand, we detected a high prevalence of unhealthy food habits, such as consuming sugary drinks (53.6%), adding salt to food before trying it (46.4%) and fried food consumption (34.8%).

### Association between eating habits and the domains of quality of life

Table 3 shows that significant differences were found between having breakfast and the four domains of QOL, with the greatest prevalence being found in the highest QOL. The same was found in home-cooked meals and legumes (except in the social relationships domain). Students with a better score in healthy eating habits had a higher QOL in all domains ( $p < 0.05$ ). On the other hand, the consumption of fried foods was significantly associated with the physical and psychological health domains. The consumption of sweet snacks was also significant in the physical health and environment domains.

**Table 2.** Descriptive characteristics of university students.

Scores Quality of Life	Mean $\pm$ SD
Physical health	76.4 $\pm$ 13.5
Psychological health	66.3 $\pm$ 17.4
Social relationships	66.7 $\pm$ 20.6
Environment domain	65.3 $\pm$ 15.9
Scores Eating habits	
Healthy eating habits	45.5 $\pm$ 14.3
Unhealthy eating habits	30.8 $\pm$ 14.4
Lower Quality of Life ( $\leq$ p25)	n (%)
Physical health	244 (20.1)
Psychological health	310 (25.6)
Social relationships	321 (26.5)
Environment domain	303 (25.0)
Healthy habits	
Eats breakfast (e/d)	592 (48.8)
Dinner (e/d)	317 (26.2)
Home-cooked meal ( $\geq$ 3t/w)	907 (74.9)
Dairy ( $\geq$ 3p/d)	52 (4.3)
Fruits ( $\geq$ 3p/d)	78 (6.4)
Vegetables ( $\geq$ 2p/d)	333 (27.5)
Whole foods ( $\geq$ 1p/d)	468 (38.6)
Fish ( $\geq$ 2p/w)	127 (10.5)
Legumes ( $\geq$ 2p/w)	313(25.8)
Unhealthy habits	
Fried food ( $\geq$ 1p/w)	422 (34.8)
Sugary drinks ( $\geq$ 1p/d)	649 (53.6)
Alcohol ( $\geq$ 1p/d)	119 (9.8)
Sweet snacks ( $\geq$ 2p/d)	312 (25.7)
Fast foods ( $\geq$ 1p/d)	158 (13.0)
Adds salt ( $\geq$ 1p/d)	562 (46.4)

e/d: every day; p/d: portion per day; p/w: portion per week t/w: times per week.

### Dietary factors related to the lower QOL according to domain

Table 4 shows that the habit of eating breakfast every day and consuming home-cooked meals at least three times a week are protective factors for QOL in all its domains. By contrast, unhealthy eating habits such as the consumption of fast food (adj. OR = 1.69; 95% CI 1.14–2.51) and fried food (adj. OR= 1.36; 95% CI 1.01–1.84) are risk factors of QOL in the physical health domain. Sweet snacks were a risk factor for the physical health (adj. OR = 1.42; 95% CI 1.03–1.97) and environment domains (adj. OR = 1.64; 95%CI 1.21–2.22). Salt consumption was risk factor for the social relationship domain (adj. OR = 1.33; 95% CI 1.02–1.74).

## Discussion

The principal results are that the habit of eating breakfast and consuming home-cooked meals are protective factors for a lower QOL in all its dimensions. However, consuming sweet snacks, fast food and adding salt are risk factors for a low QOL.

The mean QOL obtained a good score for the four domains expected for this age group: physical health (76.4  $\pm$  13.5), psychological health (66.3  $\pm$  17.4), social relationships (66.7  $\pm$  20.6) and the environment (65.3  $\pm$  15.9). However, they are lower than what was reported by the last national QOL and health survey (ENCAVI; population between 15 and 19 years).<sup>24</sup> In this sense, we must consider the adverse scenario of the study sample, mainly associated with a low SEL, highly sedentary lifestyle and potentially the

**Table 3.** Association between eating habits and the quality of life domains of university students.

Dietary factors	Quality of life (domains)											
	Physical health			Psychological health			Social relationships			Environment		
	Higher	Lower	p-value	Higher	Lower	p-value	Higher	Lower	p-value	Higher	Lower	p-value
<b>Healthy eating habits (%)*</b>												
1. Eats breakfast (e/d)	51.96	36.48	0.000	53.22	36.13	0.000	51.07	42.68	0.010	52.59	37.62	0.000
2. Dinner (e/d)	26.34	25.41	0.767	28.82	18.39	0.000	28.06	20.87	0.012	27.39	22.44	0.089
3. Home-cooked meal ( $\geq 3$ p/w)	32.38	23.35	0.004	33.23	22.39	0.000	32.40	22.56	0.000	32.67	22.66	0.001
4. Dairy ( $\geq 3$ p/d)	5.74	3.93	0.212	4.32	4.19	0.922	4.71	3.12	0.226	4.73	2.97	0.190
5. Fruits ( $\geq 3$ p/d)	6.51	6.15	0.837	6.76	5.48	0.429	6.73	5.61	0.481	6.49	6.27	0.892
6. Vegetables ( $\geq 2$ /d)	28.20	24.59	0.259	27.72	26.77	0.749	28.62	24.30	0.137	28.27	25.08	0.281
7. Whole foods ( $\geq 1$ p/d)	39.77	34.02	0.099	40.13	34.19	0.064	39.28	36.76	0.426	39.38	36.30	0.340
8. Fish ( $\geq 2$ p/w)	11.67	5.74	0.007	11.31	8.06	0.108	11.00	9.03	0.324	11.22	8.25	0.144
9. Legumes ( $\geq 2$ p/w)	27.27	20.08	0.022	27.16	21.94	0.007	27.05	22.43	0.105	27.28	21.45	0.045
<b>Unhealthy eating habits (%)*</b>												
1. Fried food ( $\geq 1$ p/w)	33.26	40.98	0.024	33.15	39.68	0.037	33.56	38.32	0.125	33.33	39.27	0.060
2. Sugary drinks ( $\geq 1$ p/d)	53.93	52.05	0.599	54.77	50.00	0.147	45.90	47.98	0.523	54.02	52.15	0.572
3. Alcohol ( $\geq 1$ p/d)	10.12	8.61	0.477	10.09	9.03	0.590	9.32	11.21	0.327	10.34	8.25	0.290
4. Sweet snacks ( $\geq 2$ p/d)	24.59	30.33	0.067	23.95	30.97	0.015	24.80	28.35	0.213	23.54	32.34	0.002
5. Fast food ( $\geq 1$ p/d)	11.67	18.44	0.005	12.64	14.19	0.483	13.02	13.08	0.976	11.99	16.17	0.061
6. Adds salt ( $\geq 1$ p/d)	45.76	48.77	0.400	45.90	47.74	0.574	44.78	50.78	0.065	45.43	49.17	0.258
<b>Total score Eating habits (mean <math>\pm</math> DS)**</b>												
Healthy (0-100)	25.8 $\pm$ 0.16	24.0 $\pm$ 0.36	0.000	26.0 $\pm$ 0.17	23.8 $\pm$ 0.29	0.000	25.9 $\pm$ 0.02	24.3 $\pm$ 0.29	0.000	25.9 $\pm$ 0.17	24.0 $\pm$ 0.32	0.000
Unhealthy (0-100)	12.7 $\pm$ 0.10	13.1 $\pm$ 0.21	0.054	12.8 $\pm$ 0.11	12.9 $\pm$ 0.18	0.432	12.8 $\pm$ 0.11	12.8 $\pm$ 0.18	0.866	12.7 $\pm$ 0.10	13.1 $\pm$ 0.19	0.037

Note. Lower quality of life: score  $\leq 25$ th percentile; Higher quality of life: score  $> 25$ th percentile.

e/d: every day; p/d: portion per day; p/w: portion per week.

\*Chi-square test to compare proportions.

\*\*Student's t-test to compare means.

**Table 4.** Eating factors related to lower quality of life by domain.

Dietary factors	Quality of life (domains)							
	Physical health		Psychological health		Social relationships		Environmental domain	
	adj. OR	95% CI	adj. OR	95% CI	adj. OR	95% CI	adj. OR	95% CI
<b>Healthy eating habits</b>								
1. Eats breakfast (every day)	0.53*	0.39–0.72	0.49*	0.37–0.65	0.68*	0.52–0.89	0.55*	0.41–0.73
2. Home-cooked meal ( $\geq 3$ p/w)	0.68*	0.48–0.93	0.54*	0.40–0.74	0.63*	0.47–0.85	0.58*	0.42–0.78
3. Dinner (every day)	1.09	0.78–1.53	0.64*	0.46–0.88	0.69*	0.50–0.95	0.91	0.66–1.26
4. Dairy ( $\geq 3$ p/d)	1.58	0.82–3.04	1.07	0.56–2.05	0.72	0.36–1.47	0.73	0.34–1.54
5. Fruits ( $\geq 3$ p/d)	0.82	0.44–1.53	0.70	0.39–1.27	0.84	0.48–1.48	0.87	0.49–1.54
6. Vegetables ( $\geq 2$ p/d)	0.80	0.57–1.12	0.96	0.71–1.30	0.88	0.65–1.18	0.79	0.58–1.09
7. Whole foods ( $\geq 1$ p/d)	0.83	0.61–1.12	0.78	0.59–1.03	0.94	0.71–1.24	0.98	0.73–1.30
8. Fish ( $\geq 2$ p/w)	0.53*	0.30–0.95	0.77	0.48–1.22	0.76	0.49–1.20	0.85	0.53–1.37
9. Legumes ( $\geq 2$ p/w)	0.75	0.53–1.08	0.82	0.60–1.13	0.78	0.57–1.08	0.75	0.54–1.04
<b>Unhealthy eating habits</b>								
1. Fried food ( $\geq 1$ p/w)	1.36*	1.01–1.84	1.30	0.99–1.71	1.24	0.94–1.63	1.28	0.96–1.70
2. Sugary drinks ( $\geq 1$ p/d)	0.95	0.70–1.27	0.80	0.61–1.05	0.89	0.68–1.17	0.90	0.69–1.19
3. Alcohol ( $\geq 1$ p/d)	0.83	0.50–1.38	0.84	0.53–0.33	1.20	0.79–1.85	0.72	0.44–1.18
4. Sweet snacks ( $\geq 2$ p/d)	1.42*	1.03–1.97	1.33	0.99–1.79	1.25	0.93–1.69	1.64*	1.21–2.22
5. Fast food ( $\geq 1$ p/d)	1.69*	1.14–2.51	1.08	0.73–1.60	1.04	0.70–1.54	1.33	0.90–1.95
6. Adds salt	1.18	0.88–1.58	1.14	0.87–1.49	1.33*	1.02–1.74	1.19	0.90–1.56

Note: All models were adjusted for gender, socioeconomic level, sedentary lifestyle, BMI and tobacco consumption.

Lower quality of life: score  $\leq 25$ th percentile.

p/d: portion per day; p/w: portion per week.

\* $p < 0.05$ .

ethnic group<sup>13,25</sup> When compared internationally, our scores are higher than the average of developing countries and very close to those of developed countries (United States and Greece).<sup>26</sup>

Regarding the habits evaluated in this study, it should be noted that only 48.8% of the students are in the habit of eating breakfast every day. We consider it a negative indicator, because we know that the ideal is to eat breakfast every day to promote health and well-being. If comparing with other studies, this prevalence is less frequent than in other national studies and as reported by ENCAVI (74.2% population between 15 and 19 years) and the

National Survey of Food Consumption in Chile (ENCA; 76.5% population between 14 and 18 years).<sup>24,27</sup> However, similar studies on the same population found that less than half of students ate breakfast every day.<sup>28,29</sup> A recent study on American students found that skipping meals, especially breakfast, is common among high school students (63.1% of students missed  $\geq 1$  day of breakfast).<sup>29</sup> In another study, Spanish students who miss meals may be at risk of poor nutrition, unhealthy eating patterns, eating disorders or other unhealthy weight control behaviors.<sup>30</sup> Also, it has been reported that people who eat a good-quality breakfast showed better QOL and lower levels of

stress and depression than those who ate a poor or very poor-quality breakfast.<sup>31</sup>

In our study we found that the consumption of home-cooked meals proved to be a protective factor for the lower QOL, especially in the psychological health domain. Generally, people who eat outside the home as students tend to eat ultra-processed food, high in energy and poor in nutrients.<sup>32</sup> This is very relevant because it allows us to guide nutritional interventions toward the promotion of a more natural, more home-made diet, especially at lunch and dinner.

In relation to compliance with the recommendations of Chilean food guides, we found a low consumption rate of daily portions of dairy products (4.3%), fruits (6.4%) fish (10.5%), legumes (25.8%) and vegetables (27.5%). These results were better than the last national health survey 2018 (NHS)<sup>33</sup> obtained in subjects from 15 to 24 years with respect to compliance of fish consumption (7.6%), fruits and vegetables (14.4%), and legumes (22.6%), and it was worse in relation to dairy consumption (23%). However, this level of compliance is insufficient to fully conform to a healthy diet. The outcomes are worrisome considering the strong evidence that supports the protective role of fruits and vegetables against various chronic diseases that affect QOL,<sup>34,35</sup> in particular cancer, where enough evidence shows that consuming foods containing fiber helps protect against colorectal cancer and overweight and obesity. In addition, dairy foods showed strong evidence in a reduced risk of colorectal cancer.<sup>36,37</sup> In the same way, we have seen the positive effect of fish consumption on cardiovascular diseases and cognitive impairment.<sup>38,39</sup>

On the other hand, high rates of cardiovascular risk factors had been reported in university students in Chile.<sup>40</sup> This is consistent with other studies conducted on college students in Latin America<sup>41</sup> and the US.<sup>42</sup> At the university stage, students are highly vulnerable and they encounter new personal challenges in life that may be accompanied by different risk behaviors, such as eating habits that may negatively impact QOL.<sup>43</sup> In our study we found a high prevalence of unhealthy eating habits, such as consuming sugary drinks (53.6%), adding salt to food before trying it (46.4%) and fried food consumption (34.8%).

Consumption of ultra-processed foods is highly prevalent in the Western dietary pattern. According to Monteiro, ultra-processed foods are made to be hyper-palatable and attractive, with a long shelf-life, and can be eaten anywhere, anytime.<sup>44</sup> A systematic review shows that there is strong evidence to suggest a higher risk of developing chronic diseases when fried foods are eaten more frequently (i.e., four or more times per week).<sup>45</sup> Ultra-processed food consumption was associated with a higher risk of overweight and obesity in a prospective cohort of Spanish middle-aged adult university graduates.<sup>46</sup> In recent years, evidence has shown a displacement of minimally processed foods and freshly prepared dishes toward ultra-processed products. This change is associated with unhealthy dietary nutrient profiles and various diet-related non-communicable diseases.<sup>47</sup> This could be associated with a lower QOL due to a greater

number of disability-adjusted life years (DALY).<sup>48</sup> In our study, we reported that fast food, fried foods and sweet snacks (also, the environment domain) were risk factors of QOL in the physical health domain.

Another risk factor with statistical significance was adding salt to food before tasting it for the social relationship domain of QOL. Additionally, as we showed previously, a high prevalence of salt consumption was found among our university students. This is consistent with the ENCA, which shows that 95.7% of the Chilean population of 15-24-year-olds consumes > 5 grams of salt per day.<sup>27</sup> Dietary salt reduction is important strategy for the prevention and treatment of lifestyle-related diseases, including hypertension,<sup>49</sup> and could contribute to a better QOL.

With respect to the strengths and limitations of this study, it had several strengths, including being a representative sample of public university students. In addition, the surveys used on food and QOL were validated. Limitations of this study include the non-probabilistic sample and the results not being generalizable to other universities, which may have another SEL distribution. Another limitation is that all data were self-reported through an online survey; thus, responses may be affected by social desirability or recall bias. There are also limitations of a cross-sectional study, which does not allow the cause-effect association to be established; this can be an interesting challenge for future research.

## Conclusions

Healthy and unhealthy eating habits are associated with different dimensions of QOL. The habit of eating breakfast and home-cooked meals are protective factors of QOL in all its dimensions. Fast food, fried foods and sweet snacks are risk factors of QOL in the physical health domain. The intake of sweet snacks was a risk factor for the physical health and environment domains, while adding salt to food before tasting it was a risk factor for the social relationship domain.

Public and private institutions must ensure healthy environments through university policies that prioritize health promotion initiatives aimed at the university as an environment, rather than the individual's habit changing strategies. For this, the construction of physical, psychological and social environments that can favorably influence the QOL of the university community is required. This will be a stimulus to motivate and carry out positive changes in their behavior. In the specific case of food consumption, there should be places where the educational community can choose healthy and affordable food options, such as cafeterias, and water fountains should be available to encourage the necessary consumption of liquid,<sup>50</sup> which could help improve the university students' QOL.

## Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of Chile and received approval from the Ethics Committee of the Universidad de La Frontera.

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