

Original Article

Excess weight and its association with dietary habits, sleep quality, and physical activity among adolescents from a public school in Peru

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Abstract

Excess weight among adolescents in Latin America has reached alarming levels, with Peru above global averages. Yet what drives this trend in vulnerable school settings remains poorly studied. This study evaluated the association between dietary habits, sleep quality, and physical activity with excess weight among adolescents from a public school in Peru. A cross-sectional study was conducted with 193 adolescents aged 12 to 17 years enrolled in secondary education. Three validated instruments assessed the study variables. Excess weight was determined by BMI-for-age; Chi-square and Cramer's V were applied. Overall, 67.36% of adolescents had excess weight, with higher prevalence in females (74.74%) than males (60.20%; $p=0.031$). Dietary habits were significantly associated with excess weight ($p=0.034$), but in an unexpected direction: those without excess weight showed more unhealthy habits (76.19%) than those with excess weight (60.77%). No significant associations were found with sleep quality ($p=0.666$) or physical activity ($p=0.897$). The prevalence of excess weight (67.36%) far exceeded national figures, pointing to a serious vulnerability in this school setting. The unexpected direction of the dietary habits association raises important questions about what drives excess weight in vulnerable settings, reinforcing the need for comprehensive preventive programs.

Keywords: adolescent, overweight, eating habits, sleep quality, physical activity

Introduction

In recent decades, excess weight has become one of the leading chronic non-communicable diseases (NCDs) affecting children and adolescents worldwide. According to the World Health Organization (WHO), prevalence among children and adolescents aged 5 to 19 years increased from 8% in 1990 to 20% in 2022 [1]. This global trend is also reflected in Peru, where 24.8% of adolescents are affected: 19.3% with overweight and 5.5% with obesity [2], which represents a critical challenge for public health, especially in vulnerable school settings where large numbers of adolescents are concentrated [3]. This concern is particularly relevant dur-

ing adolescence, between the ages of 10 and 19, since health-related behaviors developed in this period tend to persist into adulthood [4].

Among the factors that shape this trajectory, dietary habits, sleep quality, and physical activity have consistently been linked to weight variations in adolescents [5–8]. These risks have become even more relevant since the COVID-19 health emergency, which brought a rise in sedentary lifestyles, high exposure to high-calorie diets, and sleep disturbances, all linked to increased body weight [2, 9]. In this context, schools bring together large numbers of adolescents and become strategic spaces for implementing preventive interventions [10–12]. At the biological level, the reasons



behind this association are also well documented. From a physiological standpoint [13], sustained energy imbalance, driven by reduced caloric expenditure and disruption of appetite-regulating hormones (leptin and ghrelin) due to sleep deprivation, represents a central mechanism behind this complex problem [14–16].

Despite the general evidence available, a gap in local knowledge remains regarding how these factors interact in school settings of peripheral districts with specific epidemiological profiles [17–20]. While the scale of the problem is known at a broader level, in the District of Chilca, Cañete, an area marked by socioeconomic vulnerabilities, evidence on how lifestyle habits relate to weight gain among adolescents in public schools is still limited. At schools such as “Nuestra Señora de la Asunción”, where local excess weight prevalence rates above 38% have been reported [21], it becomes necessary to determine whether local patterns of diet, sleep, and physical activity follow the associations described in the wider literature, or whether they present particular features shaped by the local social environment [17].

In this context, and given that BMI-for-age is the validated standard for epidemiological surveillance, a closer examination of the associated factors that may explain its variability is needed [19, 20]. Accordingly, this study aims to evaluate the association between dietary habits, sleep quality, and physical activity with excess weight among adolescents from the “Nuestra Señora de la Asunción” Public School in Chilca-Cañete, 2025. Beyond confirming or challenging existing associations, the findings aim to generate contextualised evidence that can guide school-based prevention strategies adapted to the particular social and environmental conditions of the Cañete region.

Material and methods

Study design

The study used a non-experimental, analytical, cross-sectional design. This approach is appropriate for estimating prevalence and identifying significant associations; however, by its nature, it identifies statistical links without establishing causality or temporal order.

Population and sample

The study was conducted at the “Nuestra Señora de la Asunción” Public School, in the district of Chilca, province of Cañete, Peru, in August 2025. The target

population consisted of 947 adolescents of both sexes, aged 12 to 17 years, enrolled in the five grades of secondary education.

The final sample consisted of 193 adolescents, obtained through stratified random sampling by age, sex, and academic grade. The sample size was calculated using EPIDAT 4.2 [22], considering an expected correlation coefficient of $r=0.2$, a statistical power of 80%, and a 95% confidence level [4]. Adolescents without chronic conditions, disabilities, or treatments that could interfere with anthropometric assessment or questionnaire comprehension were included. Pregnant adolescents (self-reported), high-performance athletes (self-reported), and those with syndromes affecting growth or body composition were excluded.

Variables and measurements

The dependent variable was excess weight, defined as a BMI-for-age z-score above +1SD. Z-scores were calculated using WHO AnthroPlus 1.0.4 software [23], which applies WHO growth reference standards differentiated by sex and age. Diagnostic categories included Normal (z-score between -1 and +1 SD)=1, Overweight (z-score +1 to +2 SD)=2, and Obesity (z-score above +2 SD)=3.

The independent variables were dietary habits, sleep quality, and physical activity. Sociodemographic variables included age and sex. Weight was measured with an OMRON digital scale, model HBF-514C [24], with a capacity of 2 to 150 kg and a precision of 0.1 kg, calibrated daily with a known standard weight. Height was measured with a portable three-section stadiometer [25], with a range of 0 to 199 cm and a precision of 0.1 cm, following the Frankfurt plane.

Dietary habits were assessed with the Adolescents Food Habits Checklist, adapted and validated for the Peruvian adolescent population [26], with a Cronbach's alpha of 0.856. The instrument consisted of 18 questions with frequency-based responses covering food selection, preparation and consumption of fruits and vegetables, reduction of fats and sugars, and eating practices outside the home. The total score ranges from 0 to 72; a score of 43 or below indicates unhealthy dietary habits, while a score above 43 indicates healthy habits. Notably, all items are scored in the same direction: questions about healthy foods ask how often they are consumed, while questions about unhealthy foods ask how often they are avoided. A higher total score therefore reflects a healthier dietary pattern.

Sleep quality was measured with the Pittsburgh Sleep Quality Index (PSQI), adapted and validated for

the Peruvian population [26], with a Cronbach's alpha of 0.824. This instrument includes 19 self-assessment questions organized into seven components: subjective quality, latency, duration, efficiency, disturbances, medication use, and daytime dysfunction. The total score ranges from 0 to 21; a score of 5 or below indicates good sleep quality, while a score above 5 indicates poor sleep quality.

Physical activity was assessed with the Physical Activity Questionnaire for Adolescents (PAQ-A), adapted for the Peruvian population with a Cronbach's alpha of 0.8 [27]. The instrument consisted of 9 items on a 5-category Likert scale, asking about physical activity over the previous 7 days, including physical education classes, organized sports, leisure exercise, and weekend activity. The total score is calculated as the arithmetic mean of the first 8 items; a score below 2.75 indicates an inactive adolescent, while a score of 2.75 or above indicates an active adolescent.

Procedure

Data collection was carried out in five stages: institutional coordination, awareness-raising, obtaining informed assent and consent, questionnaire administration, and anthropometric measurements. First, institutional authorization was obtained through a formal letter to school authorities, followed by coordination with teachers and students during an informational meeting where the study was explained and the assent form was distributed, applying inclusion and exclusion criteria.

Subsequently, the parents or guardians of students who provided their assent were contacted through a virtual meeting to present the study and obtain informed consent. With both documents in hand, questionnaires on dietary habits, sleep quality, and physical activity (Adolescents Food Habits Checklist, PSQI, and PAQ-A) were administered in-person during scheduled tutoring sessions.

Finally, anthropometric measurements were taken to calculate BMI-for-age. These were conducted in-person during group sessions by grade in the school's health room. The process was led by the researcher and health professionals with international ISAK certification (Levels 1 and 2), following the technical guidelines for anthropometric nutritional assessment in adolescents [25]. To ensure measurement quality, the Technical Error of Measurement (TEM) was calculated. The team achieved a TEM below 1% for both weight and height, and equipment was calibrated daily before each session.

Statistical analysis

Data were entered in Excel and processed in JASP. Descriptive statistics were applied: means and standard deviations for normally distributed data, and medians with interquartile ranges for non-parametric data, as appropriate for quantitative variables. Qualitative variables were presented as frequencies and percentages.

To assess associations between categorical variables (excess weight, dietary habits, sleep quality, and physical activity), the Chi-square test was used, and Cramer's V coefficient was calculated to evaluate effect size (interpreted according to Cohen, 1988) for 2×2 tables: 0.10 = small effect; 0.30 = moderate effect; 0.50 = large effect. A complementary analysis was also carried out using Spearman's correlation coefficient to evaluate the relationship between BMI-for-age and the study variables in their continuous or ordinal format. A significance level of $p < 0.05$ was applied to all tests.

Ethical considerations

The study was approved by the Institutional Research Ethics Committee of Universidad Científica del Sur (code N° 1029-CIEI-CIENTIFICA-2025). Confidentiality, respect for participant autonomy, and compliance with Law No. 27337 of the Code of Children and Adolescents were ensured [28]. Any emotional risk was minimized through respectful communication adapted to the students' educational level.

Results

The study included 193 adolescents. Of all participants, 50.78% were male and 67.36% had excess weight. Regarding dietary habits, 65.80% showed unhealthy habits. In terms of sleep quality, 54.92% reported good sleep quality. Additionally, 56.48% of adolescents were classified as physically inactive (Table 1).

When examining the distribution of excess weight by sex, 39.80% of males had a normal BMI, while females showed a significantly higher frequency of excess weight, reaching 74.74%. Statistical analysis confirmed a significant association between the two variables ($p = 0.031$), showing that the prevalence of excess weight in females (74.74%) exceeded that of males (60.20%). However, Cramer's V coefficient ($V = 0.155$) suggests that the magnitude of this effect is small for the studied population (Table 2).

Table 1: Characteristics of the adolescents from the School in Chilca.

Variable	Category	n	%
Age	Median (IQR)	14 (13–15)	
Sex	Female	95	49.22
	Male	98	50.78
BMI-for-age	Without excess weight	63	32.64
	With excess weight	130	67.36
Dietary habits	Unhealthy	127	65.8
	Healthy	66	34.2
Sleep quality	Poor quality	87	45.08
	Good quality	106	54.92
Physical activity	Inactive	109	56.48
	Active	84	43.52

Table 2: Association between excess weight and sex among adolescents from the School in Chilca.

Variable	Category	Female		Male		p-value	Cramer's V
		n	%	n	%		
BMI-for-age	Without excess weight	24	25.26	39	39.8	0.031	0.155
	With excess weight	71	74.74	59	60.2		

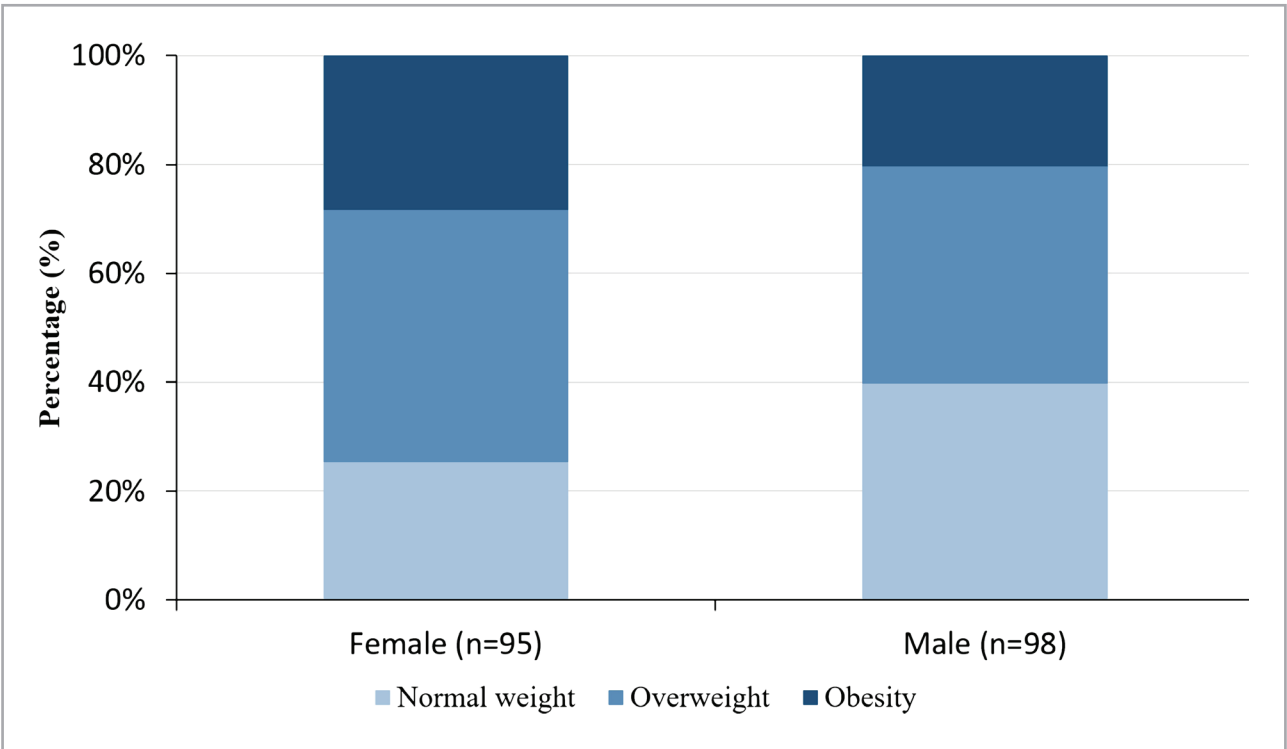


Figure 1: BMI-for-age distribution by sex among adolescents from a public school in Chilca, Peru.

Table 3: Association of variables according to excess weight.

Variable	Category	Without excess weight		With excess weight		p-value *	Cramer's V
		n	%	n	%		
Dietary habits	Unhealthy	48	76.19	79	60.77	0.034	0.152
	Healthy	15	23.81	51	39.23		
Sleep quality	Good sleep	36	57.14	70	53.85	0.666	0.031
	Poor sleep	27	42.86	60	46.15		
Physical activity	Inactive	36	57.14	73	56.15	0.897	0.009
	Active	27	42.86	57	43.85		

Note: * – Chi-square.

Figure 1 expands on the findings in Table 2 by disaggregating excess weight into its two components for each sex. The combined overweight and obesity segments account for 74.74% of females and 60.20% of males, reflecting the binary comparison already reported in Table 2. Within the excess weight portion, the main sex difference lies in the obesity component: females showed a higher obesity prevalence (28.42%) than males (20.41%), while overweight proportions were more similar between groups (46.32% vs. 39.80%).

In the analysis of the association between dietary habits and excess weight, 76.19% of adolescents without excess weight showed unhealthy habits, compared to 60.77% in the excess weight group; while 23.81% and 39.23%, respectively, reported healthy habits. A statistically significant association was found ($p=0.034$), with Cramer's V ($V=0.152$) indicating a small effect size. Notably, the direction of this association was unexpected: adolescents without excess weight showed a higher frequency of unhealthy habits compared to those with excess weight.

Regarding sleep quality, 57.14% of adolescents without excess weight and 53.85% of those with ex-

cess weight reported good sleep quality, while 42.86% and 46.15%, respectively, reported poor sleep quality. The Chi-square test showed no significant association ($p=0.666$). Cramer's V ($V=0.031$) indicates a very small effect size, suggesting that the strength of the relationship between sleep quality and excess weight is minimal, regardless of the lack of statistical significance.

The physical activity analysis showed that 57.14% of adolescents without excess weight and 56.15% of those with excess weight were classified as inactive, while 42.86% and 43.85%, respectively, were classified as active. Both groups showed a nearly identical distribution of physical inactivity. No significant association was found ($p=0.897$), and Cramer's V ($V=0.009$) indicates a near-zero effect size between physical activity and excess weight (Table 3).

As a complementary analysis, Spearman's correlation coefficient was calculated between BMI-for-age and the scores of the study variables in their continuous or ordinal form. A positive and statistically significant correlation was found between BMI-for-age and the AFHC score ($r_s=0.153$; $p=0.034$). Correlations with sleep quality ($r_s=-0.044$; $p=0.540$) and physical activity ($r_s=0.019$; $p=0.789$) were not significant (Table 4).

Table 4: Spearman correlation between BMI-for-age and the scores of the study variables.

Variable	n	rs	p-value	rs
Dietary habits (AFHC score) ^a	193	0.153	0.034 *	0.153
Sleep quality (PSQI category) ^b	193	-0.044	0.54	0.044
Physical activity (PAQ-A category) ^b	193	0.019	0.789	0.019

Note: * – $p<0.05$. r_s = Spearman's correlation coefficient. $|r_s|$ = absolute value of r_s , reported as effect size according to Cohen (1988), where $|r_s| < 0.10$ = minimal; $0.10-0.29$ = small; $0.30-0.49$ = moderate; ≥ 0.50 = large. ^a – Correlation calculated between the continuous AFHC score (range 0–72) and BMI-for-age as an ordinal variable (normal=1, overweight=2, obesity=3); ^b – Correlations calculated using the dichotomous categories of the instruments (PSQI and PAQ-A). Source: Own elaboration.

Discussion

This study found a statistically significant association between dietary habits and excess weight, although with a small effect size. What makes this finding particularly noteworthy is that the direction of this association was the opposite of what might be expected: adolescents without excess weight reported a higher frequency of unhealthy habits than those with excess weight.

This partly differs from what was reported by Gavela-Pérez et al. [4] and Xie et al. [15], who found that unhealthy dietary habits were associated with higher degrees of obesity in Spanish adolescents and young Chinese university students, respectively. In the study by Gavela-Pérez et al. [4], no such unexpected direction was observed, as adolescents with inadequate habits did show greater excess weight. These comparisons, however, should be interpreted with care, as important methodological differences exist between those studies and the present one. Gavela-Pérez et al. [4] worked with 1,326 adolescents from 24 public schools across multiple Spanish provinces, which provided greater statistical power and population diversity. Xie et al. [15] studied university students, a group that is older, more independent in their food choices, and inserted in a different social environment than secondary school adolescents, which limits how representative their findings are to this context. Ultimately, these differences in age, sample size, and study setting may help explain why our findings differ from those reported in previous studies.

Several explanations can be considered for the discrepancy found here. First, it is possible that adolescents with excess weight, being aware of their nutritional condition, may have reported healthier habits than those they actually follow in daily life, underreporting their consumption of unhealthy foods when completing the questionnaire. This type of social desirability bias is a widely recognized limitation of self-report instruments on dietary behavior in adolescents, as highlighted by Jones et al. [29]. Second, the cross-sectional design prevents establishing the temporal sequence between dietary habits and excess weight, which means that some adolescents with excess weight may have recently changed their diet in response to their own condition, so that at the time of assessment they reported healthier habits than their peers without excess weight. A third consideration concerns the statistical properties of this finding itself. The association had a small effect size (Cramer's $V=0.152$), and the study's sample may not have provided sufficient statis-

tical power to reliably detect associations of this magnitude using the chi-square test, given that the original sample size was calculated for a different analytical approach. When power is limited, the observed direction of a significant association could become more sensitive to sampling variability, which means the inverse direction found here may not fully reflect the true population pattern. This does not invalidate the significant p-value obtained, but it does call for caution in treating the direction of the association as a definitive result.

Alongside these explanations, factors not assessed in this study, such as genetic predisposition, insulin resistance, hormonal alterations related to appetite and satiety, or individual differences in basal metabolic rate, could help explain why some adolescents with excess weight reported relatively healthier diets. These biological factors fall outside the scope of a cross-sectional study using self-report instruments, and serve as a reminder that diet alone cannot fully account for weight outcomes. Future research would benefit from incorporating these variables.

These results do not, however, negate the importance of dietary habits as a modifiable factor in adolescent weight. It is important to note that the case for prioritizing dietary habits in preventive strategies rests on the broader and more consistent body of evidence, not on the direction of association observed in this study. One concrete example is the work of Medeiros et al. [10], who found that nutrition education interventions in schools can improve healthy food consumption and reduce obesity risk. The unexpected direction observed here should not be read as evidence that unhealthy habits are protective, but rather as a signal of the complexity of the diet-weight relationship in this specific context, which is likely shaped by the school food environment, family dynamics, and socioeconomic conditions that this study's design was not able to capture.

Beyond dietary habits, no significant associations were found with sleep quality or physical activity. Regarding sleep quality, participants in this study reported predominantly adequate sleep, with no link to excess weight. This is consistent with San Mauro Martín et al. [7], who also found no association between sleep hours and overweight or obesity development. However, it differs from Méndez-Cornejo et al. [5], who reported that more than half of Chilean adolescents showed sleep disturbances associated with higher BMI. These differences may reflect the measurement approaches used across studies. San Mauro Martín et al. [7] used an ad hoc questionnaire asking only about bedtime and wake-up time, while Méndez-Cornejo et al. [5] applied

a 24-item instrument evaluating sleep disorders. Chen et al. [16] focused exclusively on sleep duration, finding that sleeping fewer than 7 hours increased the risk of obesity, while replacing sedentary time with physical activity reduced that risk by 12%. These comparisons suggest that sleep duration may be a stronger predictor than perceived sleep quality, and that the irregular rest patterns characteristic of adolescence may make consistent associations harder to detect.

Regarding physical activity, adolescents with and without excess weight showed nearly identical patterns of physical inactivity, supporting the absence of a meaningful association between the two variables. This aligns with Poveda-Acelas et al. [6], who found no association between physical activity and excess weight. In contrast, Palacios-Cartagena et al. [18] observed a higher prevalence of overweight among adolescents with lower physical activity levels. One possible explanation for these contrasting results is exercise intensity, as demonstrated by Chen et al. [16], who showed that replacing low-intensity activity with moderate activity reduces obesity risk. If adolescents are engaging in light activities and perceiving them as sufficient, self-report questionnaires may overestimate actual activity levels and underestimate sedentary behavior, weakening any observable relationship with excess weight, as also warned by Palacios-Cartagena et al. [18].

Independently of its association with weight status, the overall level of physical inactivity observed in this sample is a relevant finding on its own. More than half of all adolescents were classified as inactive (56.5%), and this proportion was nearly identical across nutritional groups, at 57.14% among those with normal weight and 56.15% among those with excess weight. This uniformity across groups suggests that inactivity in this school setting could reflect structural and environmental barriers shared by all students, such as limited recreational infrastructure or unsafe spaces for outdoor activity [30], or the persistence of sedentary habits associated with the pandemic period [31]. From a public health standpoint, this finding supports the need for strategies that address inactivity as a condition affecting the school population as a whole [32], rather than targeting only those with excess weight.

Beyond these behavioral associations, the overall prevalence of excess weight found in this sample deserves particular attention: 67.36%, which far exceeds the national average of 24.8% reported by UNICEF [2] for Peruvian adolescents and the global estimates from WHO [1]. Before attributing this figure solely to contextual factors, some methodological considerations are

worth acknowledging. This study was conducted in a single public school in the district of Chilca, Cañete, which limits the generalizability of this prevalence estimate even at the local level, since the school population may not represent all adolescents in the district. Furthermore, data were collected in August 2025, a period still marked by behavioral changes that followed the COVID-19 pandemic, including higher levels of sedentary behavior, shifts in dietary patterns, and reduced access to organized physical activity, all of which have been associated with increased body weight in Peruvian adolescents [2, 9]. These factors may have contributed to the observed prevalence figure, and the result should therefore be interpreted as specific to this school and this historical moment, rather than as a generalizable regional estimate.

This result points to a clearly heightened risk in this school environment, likely shaped by a combination of socioeconomic, cultural, and environmental conditions. The rapid rise of excess weight among school-aged children and adolescents across Latin America reflects a regional challenge that intensifies in contexts where access to effective preventive interventions remains limited, reinforcing the importance of school-based strategies as a priority public health response [33]. In the Peruvian case, Rozas and Busse [17] note that school-related, institutional, and family factors all influence adolescents' eating practices. Their work highlights how school foodscapes tend to favor ultra-processed food consumption and limit access to healthier options, which could explain both the homogeneity of dietary habits and the high excess weight prevalence found in this study.

Another relevant finding concerns sex differences. A higher prevalence of excess weight was observed in female adolescents compared to males. This is consistent with Tengia and Killenga [34], who reported an excess weight prevalence of 23% in adolescent girls who also showed unhealthy dietary habits. From a physiological angle, Das et al. [35] note that excess weight in adolescent females may partly reflect the biological changes of development: approximately 50% of adult weight is gained and bone mineralization increases during this stage, with estrogen-mediated processes leading to greater fat mass accumulation in females compared to males, who tend to develop more lean mass.

Taken together, all the findings of this study point to a shared conclusion: excess weight in adolescents results from the interaction of individual behaviors with the school environment, mental health, and broader socioeconomic conditions, as noted by Gutiérrez Tolentino et al. [19]. This calls for interventions that are

multicomponent and school-centered. Jebeile et al. [14] emphasize that preventing adolescent obesity requires addressing diet, sleep, and physical activity together, since focusing on a single factor is unlikely to produce meaningful long-term changes in BMI. Health programs should therefore prioritize comprehensive approaches that account for the interplay between individual habits and the pressures of the social environment.

One of the main strengths of this study was the use of validated instruments adapted for the Peruvian adolescent population (AFHC, PSQI, and PAQ-A), which provided reliable measurement of dietary habits, sleep quality, and physical activity. Stratified sampling also helped ensure that the sample was representative of the different grades and sexes within the school, giving this study a solid basis for characterizing this specific school population. Studying a vulnerable setting was a further strength, as it generated contextualized evidence that is rarely explored in the national literature.

Regarding limitations, the cross-sectional design prevents establishing causal relationships between the variables analyzed, and the use of questionnaire-based measures may have introduced response biases, such as overreporting of healthy behaviors. The homogeneity observed in the sample regarding dietary habits and physical activity also reduced the variability needed to detect stronger associations. Moreover, psychosocial variables such as mental health, body perception, and family environment were not included, even though these factors could contribute to a more complete understanding of excess weight in this population.

Regarding the instruments used, the dietary habits questionnaire, which is based on perceived frequency of behaviors, does not allow for precise quantification of absolute intake, portion sizes, or the nutritional quality of foods consumed. The total score should therefore be understood as a general approximation of dietary patterns, not as a precise dietary indicator. Additionally, the sample size was originally calculated based on a correlation coefficient of $r=0.20$, while the main analysis used the Chi-square test. This discrepancy between the original power calculation and the analytical approach actually used may have resulted in insufficient power to reliably detect small associations. Results should therefore be interpreted with caution, though this does not invalidate the descriptive findings of the study.

Given these findings, comprehensive school-based interventions should be considered to address diet, physical activity, and rest simultaneously, rather than focusing on a single behavioral factor. Such strategies

should be tailored to the sociocultural characteristics of the community and should take into account the environmental and socioeconomic factors that may influence adolescents' behaviors. Particular attention should also be given to reducing physical inactivity across the school population as a whole, given the high proportion of inactive adolescents observed in this study. For future research, studies should use larger samples with greater statistical power, incorporate psychosocial and biological variables, and apply longitudinal designs to better understand the complexity of excess weight in vulnerable settings such as Chilca.

Conclusions

In the adolescents evaluated, dietary habits showed a statistically significant association with excess weight ($p=0.034$), though with a small effect size (Cramer's $V=0.152$) and an unexpected direction. Given the self-administered nature of the questionnaire, the limitations inherent to self-report instruments for capturing actual dietary intake, and the cross-sectional design, this result should be interpreted with caution as a preliminary observation. Sleep quality and physical activity showed no significant associations, a finding that, together with the unexpected direction of the dietary habits association, reinforces that excess weight in this population is driven by a complex set of interacting factors. The most striking finding was the high prevalence of excess weight (67.36%), well above the national figure, which highlights a priority vulnerability setting in need of targeted action. The higher prevalence observed in females, while statistically significant, was of small magnitude and should not be generalized beyond the studied population.

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Conflict of interest

The authors declare no conflict of interest.

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