BMC Psychology

RESEARCH

Open Access

Impact of the COVID-19 pandemic on self-esteem and body image in Spanish adolescents

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Abstract

Introduction Adolescence is the period in which individual and social identity, including self-esteem and body image perception, is consolidated. During the COVID-19 pandemic, lockdowns were ordered, and adolescents experienced an abrupt disruption in their lives. The aim of this study was to assess the impact of the COVID-19 pandemic (pre- or postpandemic period) on self-esteem and body image.

Methodology A cross-sectional study of Spanish adolescents was conducted between 2016 and 2023. Participants were categorized according to the COVID-19 period (pre- or postpandemic period). The Rosenberg Questionnaire and Body Shape Questionnaire (BSQ) were administered to evaluate self-esteem and satisfaction with body image.

Results A total of 627 adolescents were analysed. Of these adolescents, 297 (47.3%) were included in the postpandemic group. In both girls (32.75 ± 5.23 vs. 28.19 ± 6.59; $p < 0.001$) and boys (33.53 ± 4.08 vs. 32.18 ± 4.87; $p = 0.005$), significant differences in the Rosenberg Questionnaire and BSQ scores were observed between the prepandemic group and the postpandemic group. Adolescents in the postpandemic group (adjusted OR [aOR]: 5.24; 95% CI: 2.61–10.51; $p < 0.001$) had a greater risk of low self-esteem. Both good and regular-poor self-perceived health were significantly associated with female sex. Moreover, adolescents in the postpandemic group (aOR: 3.06; 95% CI: 1.94–4.82; $P < 0.001$) and female adolescents with self-perceived good and fair-poor health had an increased risk of mild self-esteem. Additionally, the postpandemic period (aOR: 5.42 95% CI: 2.96–9.93; $p < 0.001$), female sex, obesity and regular-poor self-perceived health were significantly associated with dissatisfaction about body shape.

Conclusions Adolescents in the postpandemic group had worse self-esteem and body image scores, and adolescents in this group were more likely to be female and had a greater risk of low self-esteem and body dissatisfaction.

Keywords COVID-19, Pandemic, Adolescent, Self concept, Body image, Exercise

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Introduction

On March 11, 2020, the World Health Organization (WHO) declared that the coronavirus disease 2019 (COVID-19) outbreak had become a pandemic [1]; thus, the Spanish government ordered the confinement of the Spanish population. Adolescents experienced an abrupt interruption of their normal lives and prolonged isolation from their peers and loved ones. In addition, they had to cope with the psychological distress caused by the threat of the pandemic and the fear of contagion, which may have led to an increase in mental health problems with a psychological impact that would have repercussions [2–4].

Young people experience major physical, psychological and behavioural changes. This implies an identity crisis, contrasting emotions and new social relationships [5]. Therefore, adolescence is considered a susceptible stage that affects individuals' self-concepts and self-perceptions [6]. Indeed, adolescents' lifestyles are strongly associated with body dissatisfaction, which is mediated by physical activity and body image; thus, a healthy lifestyle increases the probability of having better fitness and fatness, which can indirectly lead to a decrease in body dissatisfaction [5]. Adolescence is a difficult time involving the transition and maturation into an adult [7]. In this vital period, individuals are psychologically vulnerable, and it is important to provide them with the necessary support to enable them to become healthy adults [6].

Self-esteem is a subjective construct and refers to an individual's subjective evaluation of his or her value as a person [8]. Self-esteem is a primordial element cultivated by the experiences throughout our lives, as well as by the opinions and experiences that others have about us at any stage of our life, thus forming a fundamental pillar for emotional and personal development [9]. These experiences and the opinions that others have about an individual are even more important in adolescence, since, at this stage, there is increased concern about the changes involved in moving from childhood to adulthood [10], in addition to confusion in relation to an individual's own image and what others think and expect of them [11]. Some studies have identified a gender difference in self-esteem where adolescent males tend to have slightly higher levels of self-esteem than adolescent females [12, 13].

Body image dissatisfaction can be defined as a negative attitude towards one's physical appearance deriving from a perceived discrepancy between one's actual physical appearance and the desired ideal state of the body [14, 15]. Body image dissatisfaction is a core feature of eating disorders and often leads to overconcern about body shape and weight. This concept refers to the perceptions, thoughts, and feelings of individuals with respect to their bodies [16]. The internalization of beauty ideals leads individuals to estimate the difference between their own bodies and these ideals, triggering body dissatisfaction when the ideal cannot be achieved [17, 18]. Body image dissatisfaction among adolescents is a serious public health problem because it generates a series of damaging conditions, such as compromised emotional well-being, low self-esteem, symptoms of depression, and disordered eating [18, 19]. This dissatisfaction affects adolescents in different ways: boys tend to experience sociocultural pressure, encouraging them to have larger, more muscular bodies, while girls experience pressure to have a thin or ultrathin body [20–22].

Self-esteem and body image in school students are topics that have been extensively researched for years. However, the impact of the COVID-19 pandemic on self-esteem and body image has scarcely been explored.

The objective of this study was to analyse self-esteem and body image in two groups of adolescents (before and after the pandemic).

Materials and methods

A cross-sectional descriptive study was carried out between 2016 and 2023 in the José Luis Cotallo Diocesan School in Cáceres (Extremadura).

Two groups ($N = 627$) were established: one prepandemic group ($N = 330$) (from 2016–January 2020) and one postpandemic group ($N = 297$) (from January 2021 to January 2023).

The study population included adolescents aged between 11 and 15 years who were in their 1st and 2nd years of compulsory secondary education (ESO). The exclusion criteria were adolescents with serious illnesses such as cancer or with serious mental health problems (depression requiring treatment) and who, despite having parental consent, did not wish to participate.

Procedures

Data collection was carried out in January of each study year. The data were collected via individual and personalized interviews in an electronic data collection notebook (CRDe) in a room where the privacy and confidentiality of the participants were guaranteed.

Data on the following variables were collected: age, sex, anthropometric characteristics (weight and height), number of hours of sleep and academic performance. We included the last average qualification for Spanish language, English language and Mathematics (out of a maximum of 10 points.)

Weight was obtained with the TANITA BC-418 MA Bioimpedance Scale. BMI was standardized (z-BMI) by adjusting for age and sex according to data obtained for the Spanish adolescent population [23].

The Rosenberg Questionnaire [24] was administered to assess self-esteem, and the Body Shape Questionnaire

(BSQ) [25] was administered to assess satisfaction with body image. The KIDMED questionnaire [26] was used to assess the quality of the Mediterranean diet. And the Physical Activity Questionnaire for Adolescents (PAQ-A) was administered to assesses the physical exercise of the adolescent [27].

Instruments

The **Rosenberg Self-Esteem Scale (RSES)** [24] consists of 10 items and is a self-report instrument for evaluating an individual's overall self-esteem. The RSES is scored using four response options, ranging from strongly agree to strongly disagree. It is a two-dimensional scale: positive self-esteem (self-confidence or personal satisfaction) and negative self-esteem (self-contempt or personal devaluation). Five items are scored positively, and five items are scored negatively. The total score ranges from 10 to 40 points, with 10 points being the lowest self-esteem score and 40 points being the highest. With respect to the total score, a score of 30 to 40 points indicates high self-esteem, which is considered positive and normal self-esteem; a score of 26 to 29 points indicates intermediate self-esteem, which means that an individual does not have serious self-esteem problems, but it would be ideal to improve their self-esteem; and a score less than or equal to 25 points indicates low self-esteem; these are usually individuals with significant problems regarding their self-esteem [28]. The reliability of this questionnaire is derived from factor analysis, and the reliability is defined by Cronbach's alpha, which is 0.85 and 0.88 [29].

Body Shape Questionnaire (BSQ) [25]: This instrument evaluates dissatisfaction with body image due to body weight and shape; participants respond to items referring to how they have felt about their body shape in the last weeks. The questionnaire contains 34 self-report items; items are scored using a six-point Likert scale ranging from 1 (never) to 6 (always), with a total possible score ranging from 34 to 204 points. The higher the score is, the greater an individual's dissatisfaction with their body. Based on their BSQ results, the participants were divided into four groups according to dissatisfaction with physical appearance using the validated model: scores ≤ 80 (no dissatisfaction with BI); 81 ≤ scores ≤ 110 (slight dissatisfaction with BI); 111 ≤ scores ≤ 140 (moderate dissatisfaction with BI); and scores ≥ 141 (severe dissatisfaction with BI). The Cronbach's α values are between 0.82 and 0.89, and the test–retest reliability of the questionnaire is good ($r = 0.97$) [25, 30].

The Kidmed Questionnaire [26] assesses adherence to the Mediterranean diet as a prototype of a healthy diet. The index consists of 16 questions, of which 12 are positive and 4 are negative; individuals who answer "yes" to positive questions receive + 1 point, while those who answer "yes" to negative questions receive − 1 point. Points are summed at the end of the evaluation, and a score ranging from 0 to 12 is obtained. The sum of these value scores is classified into 3 levels: ≥8 points indicates the optimal Mediterranean diet (good), scores between 4 and 7 points indicate that compatibility with the Mediterranean diet should be improved (moderate), and scores ≤ 3 points indicate very poor diet quality (low) [31]. The traditional Mediterranean diet is characterized by high consumption of vegetables, fruits, legumes, and unrefined cereals, including bread; low consumption of meat and meat products; moderate consumption of milk and dairy products; and high consumption of olive oil [26]. This questionnaire has showed acceptable reliability (Cronbach's α = 0.79, 95% CI: 0.71–0.87) [32].

The Physical Activity Questionnaire for Adolescents (PAQ-A) [27] assesses the physical exercise of the adolescent in the last 7 days. It consists of 9 questions that measure aspects of the physical exercise performed by the adolescent. It also provides information on whether the person has been ill. It is evaluated by means of a scale of 1 to 5 points that establishes a graduation of the level of physical activity carried out. It allows us to know at what time of the day and of the week the adolescent is most active. Cronbach's α coefficient for PAQ-A score has showed acceptable (α = 0.72) [33].

Ethical considerations

All the data were collected according to European legislation 2016/679 regarding data protection and the Spanish 'Organic Law 3/2018 of December 5 regarding the Protection of Personal Data and Guarantee of Digital Rights [34]. The procedures were established in accordance with the Declaration of Helsinki.

This study was approved by the Ethics and Clinical Research Committee of the University of Extremadura (Spain). The clinical data were segregated from the identification data and the database was encrypted. We obtained permission from the school' administration and obtained informed consent from each parent and student. The participants were briefly informed about the study's contents and the anonymous nature of their participation.

Data analysis

Statistical analysis was carried out using IBM SPSS version 27.0 (IBM Corporation, Armonk, NY, USA). Categorical variables are reported as frequencies (%), and continuous variables are reported as averages ± standard deviations. Participants were compared according to the COVID-19 period (pre- and postpandemic). For categorical variables, the $\chi 2$ test or Fisher's exact test (if the frequency observed in any of the groups was less than 5) was used. Student's t test and one-way ANOVA

(if normally distributed) or the Mann–Whitney U test and Kruskal–Wallis test (if nonnormally distributed) were applied to compare continuous variables. A normal distribution was considered at $p > 0.05$ according to the Kolmogorov–Smirnov test.

Additionally, univariate and multivariate logistic regression analyses were conducted to investigate the possible associations between the dependent variables (presence of low/mild self-esteem and dissatisfaction) and the independent variables. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. Independent variables were included in the multivariate analysis when $p < 0.05$ was found in the univariate analysis.

Results

A total of 627 children were analysed. Of these children, 297 (47.3%) were included the postpandemic group. Significant differences between the pre- and postpandemic COVID-19 groups were found with respect to age, sex, Spanish language qualifications, English language and mathematics, KIDMED score and KIDMED categorization (Table 1).

Table 2 shows the scores and categorizations of the self-esteem (Rosenberg) and Body Shape Questionnaire (BSQ) scores stratified by sex. In the female group, significant differences were observed between the pre- and postpandemic COVID-19 groups for all the variables analysed. However, in the male group, significant differences were found in self-esteem, both for the Rosenberg score and the Rosenberg categorization and the BSQ score, although no significant differences were observed in the BSQ categorization.

When participants were analysed as a whole, without differentiating by sex, significant differences were observed in both the scores and categorizations of self-esteem and body shape. On the other hand, no significant differences were found between the pre- and postpandemic groups regarding academic courses in either females or males (Table S1 and Table S2).

Table 3 shows the predictor variables for low or mild self-esteem. Univariate analysis revealed that the postpandemic group had an increased risk of low self-esteem (odds ratio [OR]: 5.42 95% CI: 3.05–9.64; $P < 0.001$). In addition, female sex, good and regular-poor self-perceived health status, PAQ-A score and low- and mild-quality diet (KIDMED score) were significantly different between the two groups ($p < 0.05$). Similar results were found in the multivariate analysis, where the postpandemic group (adjusted OR [aOR]: 5.24; 95% CI: 2.61–10.51; $p < 0.001$) had an increased risk of low self-esteem. Female sex and good and regular-poor self-perceived health status were also significantly associated with self-esteem in the multivariate analysis. According to the univariate analysis of mild self-esteem, in the postpandemic group (odds ratio [OR]: 2.84 95% CI: 1.85–4.36; $P < 0.001$), female sex and good and regular-poor self-perceived health status were associated with an increased risk of mild self-esteem. Similar results were observed in the multivariate analysis, where the postpandemic group (adjusted OR [aOR]: 3.06; 95% CI: 1.94–4.82; $p < 0.001$), the female group and the good or regular-poor self-perceived health group in comparation with excellent-very good self-perceived health presented an increased risk of mild self-esteem. The rest of the variables included in the analysis were not identified as predictors of low or mild self-esteem.

Table 1 Baseline characteristic among participants according to pre o postpandemic group

Sociodemographic variables		Prepandemic ($n = 330$)	Postpandemic ($n = 297$)	*P* value
Age		12.75 ± 0.82	12.63 ± 0.67	**0.043**
Sex (female)		124 (37.6%)	139 (46.8%)	**0.019**
BMI (Kg/m^2)		20.67 ± 5.08	21.03 ± 4.59	**0.366**
BMI (Orbegozo categorized)	Normal weight	185 (56.1%)	164 (55.8%)	0.825
	Thinness	66 (20.0%)	61 (20.7%)	
	Overweight	41 (12.4%)	41 (13.9%)	
	Obesity	38 (11.5%)	28 (9.5%)	
PAQ-A		3.07 ± 0.72	2.92 ± 0.66	**0.007**
School Performance (Subjects score)	Spanish language	6.02 ± 1.93	7.00 ± 1.95	**< 0.001**
	Math	5.66 ± 2.24	6.47 ± 2.20	**< 0.001**
	English language	6.30 ± 2.43	6.95 ± 2.03	**0.002**
KIDMED score		5.73 ± 2.44	4.49 ± 2.17	**< 0.001**
KIDMED Categorized	Low quality	63 (19.1%)	99 (33.3%)	**< 0.001**
	Mild quality	179 (54.2%)	169 (56.9%)	
	high quality	88 (26.7%)	29 (9.8%)	

Data are expressed by average ± standard deviation and frequencies (percentage)

Abbreviations: BMI, Body Mass Index. PAQ-A, Physical Activity Questionnaire for Adolescents

Table 2 Self-steem and body shape according to pre or postpandemic group. Stratified by gender

		Total			Females			Males		
		Pre (*n* = 330)	Post (*n* = 297)	*p*-value	Pre (*n* = 124)	Post (*n* = 139)	*p*-value	Pre (*n* = 206)	Post (*n* = 158)	*p*-value
Rosenberg Score		33.24 ± 4.56	30.31 ± 6.07	**< 0.001**	32.75 ± 5.23	28.19 ± 6.59	**< 0.001**	33.53 ± 4.08	32.18 ± 4.87	**0.005**
Rosenberg Classification	Low self-steem	17 (5.2%)	57 (19.2%)	**< 0.001**	9 (7.3%)	46 (33.1%)	**< 0.001**	8 (3.9%)	11 (7.0%)	**0.001**
	Mild self-steem	41 (12.4%)	72 (24.2%)		21 (16.9%)	37 (26.6%)		20 (9.7%)	35 (22.2%)	
	Hight self-steem	272 (82.4%)	168 (56.6%)		94 (75.8%)	56 (40.3%)		178 (86.4%)	112 (70.9%)	
BSQ Score		49.26 ± 18.86	65.20 ± 36.19	**< 0.001**	51.82 ± 22.88	78.97 ± 42.28	**< 0.001**	47.72 ± 15.83	53.09 ± 24.14	**0.016**
BSQ	No Dissatisfaction	311 (94.2%)	220 (74.1%)	**< 0.001**	113 (91.1%)	80 (57.6%)	**< 0.001**	198 (96.1%)	140 (88.6%)	0.053
	Mild Dissatisfaction	13 (3.9%)	39 (13.1%)		7 (5.6%)	26 (18.7%)		6 (2.9%)	13 (8.2%)	
	Moderate Dissatisfaction	4 (1.2%)	18 (6.1%)		3 (2.4%)	15 (10.8%)		1 (0.5%)	3 (1.9%)	
	Marked Dissatisfaction	2 (0.6%)	20 (6.7%)		1 (0.8%)	18 (12.9%)		1 (0.5%)	2 (1.3%)	

Data are expressed by average ± standard deviation and frequencies (percentage)

Abbreviations: BSQ, Body shape questionnaire

Table 3 Predictor variables related to low or mild Self-steem. Univariate and multivariate analysis

		Low self-steem				Mild self-steem			
Predictor variables		**Univariate**		**Multivariate**		**Univariate**		**Multivariate**	
		OR (CI%95)	***p*-value**	**aOR (CI%95)**	***p*-value**	**OR (CI%95)**	***p*-value**	**aOR (CI%95)**	***p*-value**
Age (1 years increased)		0.86 (0.61–1.22)	0.417	-	-	1.22 (0.94–1.58)	0.133	-	-
Sex (female)		5.59 (3.20–9.77)	**< 0.001**	6.62 (3.24–13.54)	**< 0.001**	2.03 (1.34–3.09)	**0.001**	2.06 (1.31–3.23)	**0.002**
COVID-19 post pandemic		5.42 (3.05–9.64)	**< 0.001**	5.24 (2.61–10.51)	**< 0.001**	2.84 (1.85–4.36)	**< 0.001**	3.06 (1.94–4.82)	**< 0.001**
BMI (Orbegozo categorized)	Normal weight	1.00 Ref		1.00 Ref		1.00 Ref		1.00 Ref	
	Thinness	0.71 (0.35–1.45)	0.357	-	-	0.75 (0.42–1.33)	0.372	-	-
	Overweight	1.56 (0.76–3.19)	0.221	-	-	1.74 (0.97–3.13)	0.060	-	-
	Obesity	1.67 (0.79–3.52)	0.176	-	-	1.26 (0.63–2.49)	0.502	-	-
PAQ-A (1 point increased)		0.62 (0.44–0.89)	**0.010**	1.47 (0.91–2.38)	0.116	0.75 (0.55–1.02)	0.069	-	-
Self-perceived health	Excellent-Very Good	1.00 Ref		1.00 Ref		1.00 Ref		1.00 Ref	
	Good	4.68 (2.42–9.06)	**< 0.001**	5.08 (2.47–10.47)	**< 0.001**	2.73 (1.74–4.27)	**< 0.001**	2.68 (1.68–4.28)	**< 0.001**
	Regular-poor	44.15 (18.89-103.18)	**< 0.001**	55.30 (19.31-158.33)	**< 0.001**	7.88 (3.50-17.72)	**< 0.001**	9.40 (4.01–22.06)	**< 0.001**
School Performance (1 point increased)	Language Subject	1.09 (0.95–1.24)	0.210	-	-	0.93 (0.83–1.04)	0.237	-	-
	Math Subjetct	1.01 (0.90–1.13)	0.826	-	-	0.92 (0.83–1.01)	0.106	-	-
	English Subject	1.14 (0.99–1.28)	0.051	-	-	0.94 (0.85–1.03)	0.214	-	-
KIDMED Categorized	High quality	1.00 Ref		1.00 Ref		1.00 Ref		1.00 Ref	
	Low quality	4.42 (0.63-11.95)	**0.003**	1.69 (0.52–5.46)	0.379	0.93 (0.49–1.79)	0.844	-	-
	Mild quality	3.21 (1.23–8.37)	**0.017**	2.77 (0.95–8.05)	0.061	1.23 (0.71–2.13)	0.443	-	-

Data expressed by Odd Ratios (Confident interval 95%) and adjusted OR (CI%95)

Abbreviations: aOR, adjusted Odd Ratio. BMI, Body Mass Index. BSQ, Body shape questionnaire. OR, Odd Ratio. PA; Q-A, Physical Activity Questionnaire for Adolescents

Table 4 shows the predictor variables related to body shape. According to the univariate analysis, the-postpandemic period (odds ratio [OR]: 5.72 95% CI: 3.36–9.74; $P < 0.001$), female sex, obesity, good and regular-poor self-perceived health status and a low-quality diet were significantly associated with dissatisfaction with body shape. In addition, in the multivariate analysis, the postpandemic period (adjusted OR [aOR]: 5.42, 95% CI: 2.96–9.93; $p < 0.001$), female sex, obesity and regular-poor self-perceived health status were significantly associated with dissatisfaction regarding body shape.

Table 4 Predictor variables related to dissatisfaction body shape. Univariate and multivariate analysis

Predictor variables		Univariate		Multivariate	
		OR (CI%95)	*p*-value	OR (CI%95)	*p*-value
Age (1 years increased)		0.91 (0.68–1.23)	0.568	-	-
Sex (female)		4.71 (2.90–7.64)	**< 0.001**	4.52 (2.57–7.95)	**< 0.001**
COVID-19 postpandemic		5.72 (3.36–9.74)	**< 0.001**	5.42 (2.96–9.93)	**< 0.001**
BMI (Orbegozo categorized)	Normal weight	1.00 Ref		1.00 Ref	
	Thinness	0.49 (0.23–1.03)	0.060	0.44 (0.19–1.03)	0.059
	Overweight	1.68 (0.90–3.11)	0.099	1.64 (0.79–3.42)	0.182
	Obesity	3.21 (1.76–5.83)	**< 0.001**	3.12 (1.43–6.78)	**0.004**
PAQ-A (1 point increased)		0.91 (0.67–1.25)	0.585	-	-
Self-perceived health	Excellent-Very Good	1.00 Ref		1.00 Ref	
	Good	3.00 (1.76–5.11)	**< 0.001**	2.67 (1.47–4.84)	**0.001**
	Regular-poor	15.33 (7.85–29.94)	**< 0.001**	12.39 (5.57–27.54)	**< 0.001**
School Performance (1 point increased)	Language Subject	0.99 (0.88–1.11)	0.859	-	-
	Math Subject	0.95 (0.85–1.05)	0.345	-	-
	English Subject	0.99 (0.89–1.10)	0.945	-	-
KIDMED Categorized	High quality	1.00 Ref		1.00 Ref	
	Low quality	2.07 (1.01–4.22)	**0.046**	0.95 (0.39–2.30)	0.925
	Mild quality	1.57 (0.80–3.05)	0.182	1.06 (0.47–2.36)	0.884

Data expressed by Odd Ratios (Confident interval 95%) and adjusted OR (CI%95)

Abbreviations: aOR, adjusted Odd Ratio. BMI, Body Mass Index. BSQ, Body shape questionnaire. OR, Odd Ratio. PA; Q-A, Physical Activity Questionnaire for Adolescents

Discussion

The main finding in our study was that the postpandemic group had poorer scores on the self-esteem and body image questionnaires, with these differences being greater for female adolescents. In addition, the postpandemic group had an increased risk of low self-esteem and dissatisfaction with body shape.

Environmental factors are a major etiological factor in most mental disorders [35]. The COVID-19 pandemic posed an unprecedented threat to global mental health by negatively affecting the general population [36]. Children and adolescents are a more susceptible and vulnerable population and may experience greater impacts on their mental health due to the circumstances they were exposed to during the pandemic, including fear of infection, home confinement, suspension from school activities, physical distancing and the use of masks [4, 37]. These special circumstances have had a major impact on the way we live and relate to each other. Some studies have focused on the negative effects of quarantine and isolation on mental health, self-esteem and body image in adults, children, adolescents and university students [35, 37–39].

In our study, we observed an increase in low self-esteem in the postpandemic group of schoolchildren compared to the prepandemic group. Low self-esteem has been linked to mental health problems such as depression and anxiety [4, 37]. Some studies in our setting reported an increase in the number of patients diagnosed with these diseases after the COVID-19 pandemic [40, 41]. In our research, the increase in low self-esteem was statistically greater in girls, which is consistent with the findings of other studies [4, 42–44]. It is possible that girls tend to exhibit an intensified stress response, as a large body of research shows that girls are more likely to develop internalizing problems than boys, which is even more prominent in atypical circumstances [45]. Girls experience greater symptoms of depression and anxiety than boys during confinement, with concerns predominantly related to school [46]. In addition, girls are estimated to be twice as likely to develop posttraumatic stress disorder [7, 47]. It is possible that the lack of social connectedness due to school closures has affected adolescents' sense of worth, as adolescence is a particularly important period for developing identity among peers and in society [48]. Finally, mental health problems in childhood and adolescence may have biopsychosocial consequences for future health [35, 42, 49].

On the other hand, our results revealed increased body dissatisfaction in the postpandemic group compared with the prepandemic group. Sociocultural models of body dissatisfaction posit that body dissatisfaction emerges in response to social pressures (e.g., pressures exerted by mass media, family, and peers) that impose unrealistic and mostly unattainable body ideals [17, 21]. Adhering to socially prescribed body ideals can lead to dissatisfaction with one's own body [22]. A meta-analysis showed that women and adolescents exposed to media spent more money improving their appearance and were more susceptible to eating disorders because they felt dissatisfied with their body image. High susceptibility to

developing unsuitable eating behaviours may be related to an attempt to achieve a pattern of beauty promoted by mass media [50]. Overall, there is evidence that overconcern with body shape and weight represents a risk factor for the development of an eating disorder [15, 51]. According to other studies [20, 52], girls had greater body image dissatisfaction than boys. Being a girl was independently associated with increased body dissatisfaction. The pro-thin female beauty ideal is more internalized and automated in female functioning patterns [53, 54]. In addition, there is also great social and media pressure to believe that a young, slim woman is the most socially successful, where adolescent females are under much more pressure than men to maintain an appearance in accordance with established standards [17, 53, 55].

In our study, differences were observed between the pre- and post-pandemic groups in scores on the Mediterranean diet adherence and physical activity questionnaire. However, in the predictor analysis both variables were not associated with low and mild self-steem and body shape dissatisfaction. During the period of post-confinement, opportunities for physical activity due to the closure of schools, sports clubs and public spaces, etc., were reduced, as manifested in several studies from different regions [56–58]. Contrary to our findings, some studies have found a significant association between self-esteem with adherence to the Mediterranean diet and level of physical activity in adolescents [59, 60].

The main limitation of our study is the methodological design; as this was a cross-sectional study, the findings indicate associations and not causal relationships. On the other hand, the impact of the pandemic has been studied in different schoolchildren, which is not the most accurate way to measure it. Moreover, all participants belong to the same area, so the results are unlikely to be generalisable. On the other hand, most parents did not answer questions related to socio-economic and cultural status, so these variables were not considered in the analysis, which may influence our findings. Finally, self-esteem and body image parameters are culturally influenced, so our results may not be comparable to those of other populations. However, this work has multiple strengths, including the analysis of the contributions of confinement and school closures to social isolation and social anxiety in adolescents, as these results may provide information for intervention approaches in this population. Our results highlight the need to support adolescents at risk for mental distress in times of increased stress and uncertainty, possibly contributing to fostering greater resilience in challenging situations. It is crucial that interventions for these adolescents not only focus on visible symptoms or maladaptive behaviours associated with social anxiety but also prioritize dimensions fundamental to their psychological functioning, such as self-esteem.

Conclusion

In conclusion, the postpandemic group of schoolchildren had poorer scores on self-esteem and body image questionnaires, with these differences being greater for females. In addition, the postpandemic group of schoolchildren had an increased risk of low self-esteem and dissatisfaction with body shape.

This evidence suggests that there is a great need for interventions to promote mental health among adolescents, primarily among girls.

Impact on clinical practice

- Adolescents are at a crucial stage of development, increasing their susceptibility to the negative mental health impacts of the COVID-19 pandemic and response measures.
- We found that a postpandemic cohort of adolescents had lower self-esteem and increased body image dissatisfaction compared to a prepandemic cohort from the same school.
- Factors associated with poorer self-esteem and body image outcomes also included the postpandemic period, female sex, academic achievement, and academic performance.
- Protective factors against negative outcomes included a greater number of hours of sleep, better self-rated health and a healthy diet.

Abbreviations

aOR	Adjusted OR
BMI	Body Mass Index
BSQ	Body Shape Questionnaire
CIs	Confidence intervals
CRDe	Electronic data collection notebook
ESO	Compulsory secondary education
ORs	Odds ratios
PAQ-A	Physical Activity Questionnaire for Adolescents
RSES	Rosenberg Self-Esteem Scale
WHO	World Health Organization

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s40359-025-02478-6.

Supplementary Material 1

Acknowledgements

We would like to thank the adolescents for their participation and the Colegio Diocesano de Cáceres, teachers and families for their collaboration in this study. Especially Chema Candela and David Muelas. We would like to thank Irene, Jaime and Elena.

Author contributions
Conceptualization, F.L.-E., A.T.D.-M., S.R.-M. and J.F.C.-G.; Methodology, J.D.P.-Z., J.L.-G., M.L.C.-M., R.R.-M., S.H.-G. and F.L.-E.; Validation, J.F.C.-G. and S.R.-M.; Formal analysis, J.F.C.-G. and S.R.-M.; Investigation, A.T.D.-M., M.L.C.-M., J.L -G., and F.L.-E.Data Curation, S.R.-M., J.D.P.-Z.; Writing—original draft preparation, M.L.C.-M., R.R.-M., S.H.-G. and F.L.-E.; Writing—review & editing, S.R.-M., A.T.D.-M., and J.F.C.-G.; Supervision, J.D.P.-Z., J.L.-G., S.H.-G. and F.L.-E.All authors have read and agreed to the published version of the manuscript.

Funding
This research did not receive any specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data availability
The data that support the findings of this study are not openly available due to reasons of sensitivity and are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
This study was conducted in accordance with the Declaration of Helsinki and the Data Protection Regulation (EU) 2016/679 of the European Parliament. Ethical approval for this study was granted by the Ethics Committee for Research on Human Beings of the Hospital of Cáceres (Spain) with number CEIM20/278. We obtained permission from the school' administration and obtained informed consent from each parent and student. All participants signed the informed consent document after a complete and appropriate explanation of the study. The principal researcher took appropriate measures to safeguard the recordings of the interviews.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Received: 12 June 2024 / Accepted: 11 February 2025
Published online: 18 February 2025

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