

Emotional state, life satisfaction and worries regarding COVID-19 in Spanish and Chilean adolescents during Spring 2020

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Abstract

Background: The lockdown due to COVID-19, has affected the mental health of the population. Recent literature suggests a greater psychological impact on adolescents regardless of their cultural background.

Objective: The aim is to analyze the emotional state, life satisfaction and worries about COVID-19 in Chilean and Spanish adolescents.

Method: A total of 1078 adolescents ($M=15.18$; $SD=1.25$) completed the Depression, Anxiety and Stress Scale, the COVID-19 Worry Scale and the Life Satisfaction Scale. The design was cross-sectional and descriptive. Descriptive analyses, t-tests, and linear regressions were performed.

Results: More emotional symptoms, worries and lower life satisfaction were observed in Chile. Girls had more worries and emotional symptoms. An affected psychological state is also observed in Spanish adolescents, especially in Chilean adolescents. Worries about COVID-19 affect depression, anxiety, stress and life satisfaction in both samples.

Conclusions: Further research is needed to prevent psychological distress in future pandemics. Developing tailored interventions are encouraged.

Keywords: COVID-19; Anxiety; Stress; Depression; Life satisfaction; Worries; Adolescence

Introduction

The COVID-19 pandemic has caused governments to implement different restrictions and recommendations to the population. One of the most widely used measures was home lockdown, which constitutes an effective strategy to curb the spread of the virus (1). These measures provoke a myriad of psychological consequences (2), however, the effects can vary among different socio-demographic sectors, one of particular interest being adolescents.

Adolescence (10-19 years) is a developmental stage between puberty and adulthood independence, which depends on individual development and cultural norms. It is a period of social and biological changes that can lead to increased vulnerability to psychological disorders (e.g., depression, anxiety) (3).

In recent decades, a high prevalence of depression and anxiety, as well as a decrease in life satisfaction, has been observed in the Spanish and Chilean adolescent population (4–6). The emotional state is lower in girls, who also present lower life satisfaction compared to boys (5,6). Currently, several studies

have analyzed the influence of COVID-19 on adolescent mental health (7). Overall, increases in depressive, anxious and stressed symptoms were observed in adolescents during the pandemic (8,9). This trend was also met in Spain (10,11). Although fewer quantitative studies have been conducted (12,13), Chilean adolescents showed a similar trend to Spanish adolescents, with low life satisfaction, as well as a high level of anxiety and fear contagion (14). Regarding concerns, most adolescents were moderately and severely worried about COVID-19 (15).

In terms of gender differences, girls presented higher levels of anxiety, depression and stress (8,16). In addition, they also showed greater worries about COVID-19 (8). Finally, a decrease in life satisfaction was also observed in adolescents, especially with in girls (17).

Anxiety and depression have been associated with concern for one's health in the wake of the COVID-19 pandemic, as well as economic concern regarding the pandemic (18). In addition, other studies indicate that concern about COVID-19 is more closely

associated with younger people (19). Moreover, COVID-19 worries positively influence psychological distress in the Norwegian population (20). Panchal et al. (21) conducted a systematic review stating that the COVID-19 lockdown has caused psychological distress in vulnerable groups such as adolescents and children, especially those with previous psychological distress. Therefore, it is of great importance to study the specific factor of the worries regarding COVID-19 in younger samples, such as adolescents, as well as to examine its association with emotional state and life satisfaction.

According to the meta-analysis of Polanczyk (2015) (22) there are approximately 241 million young people who are affected by a mental disorder. Furthermore, these authors recognize that there are large socioeconomic differences between the different continents evaluated (i.e., Europe and South America). Moreover, within the Americas, Chile is one of the countries with the highest prevalence of mental disorders, especially in adolescents, together with a high treatment gap (23), which may have increased with/during the pandemic. Therefore, one of the motivations of the study is to compare the situation in Spain and Chile during a global stress factor such as the COVID-19 pandemic. Kola et al. (24) state that the pandemic's impact on mental health is greater in countries with greater poverty and worse socioeconomic status. In general, a worse psychological state is hypothesized in Chile since they started from a more unfavorable socioeconomic situation than Spain (25). Concretely, this study aims to examine the emotional state, life satisfaction and COVID-19 worries regarding Chilean and Spanish adolescents. Therefore, it is expected that 1) symptoms of depression, anxiety, stress and worry are higher in Chilean (8,26) and girls (5,16) 2) lower life satisfaction is also hypothesized in Chileans (27) and girls (6). And finally, it is expected

that 3) worries about COVID-19 influence depression, anxiety, stress and life satisfaction.

Methods

Participants

A total of 1078 adolescents between 12 and 17 years of age participated ($M = 15.18$; $SD = 1.25$). Of the sample, 74.7% are girls and 23.2% are boys. Moreover, the Chilean sample has a higher proportion of girls (85.2%) compared to Spain (63.2%). Detailed information about the characteristics of the participants is shown in Table 1.

Instruments

Sociodemographic information

Ad hoc questions were asked to assess the country of residence, gender, age, main occupation and if they had a partner.

Worries about COVID-19 and its consequences (W-COV)

Monaco et al. (28) designed this instrument composed of 16 items and three factors. Worry about health has 5 items ($\alpha = .88$), Worry about the economy has 5 ($\alpha = .69$) items and psychosocial worry 6 ($\alpha = .72$). The validation was conducted cross-culturally during the spring of 2020, with Spain and Chile participating in it. The response format is Likert-type, ranging from 1 (Almost never) to 5 (Almost always) and the overall internal consistency is adequate ($\alpha = .84$ in Spain and $\alpha = .83$ in Chile).

Depression, Anxiety and Stress Scale (DASS-21)

Lovibond and Lovibond (29) designed DASS-21 in order to assess emotional symptoms. For Chile, the validation of Antúnez and Vinet (4) adapted to the Chilean population has been used and for the Spanish population, it has been selected as the scale adaptation (30). The questionnaire has 21 items and 3 scales: Depression, anxiety and stress, with 7 items

TABLE 1. Descriptive statistics and frequency analysis of Spanish and Chilean participants

Demographic variables	Spain n (%) o M (SD)	Chile n (%) o M (SD)
Country of residence during lockdown	530 (49.2%)	548 (50.8%)
Gender		
Female	322 (63.2%)	467 (85.2%)
Male	189 (35.7%)	60 (10.9%)
Other	2 (0.4%)	21 (3.8%)
Missing values	4 (0.8%)	0 (0%)
Age (range=12-17 years old)	14.84 (1.19)	15.51 (1.21)
Occupational status		
Student	202 (38.1%)	499 (91.1%)
Worker	0 (0%)	2 (0.4%)
Student and Worker	6 (1.1%)	10 (1.8%)
None of the two options	5 (0.9%)	37 (6.8%)
Missing values	317 (59.8%)	0 (0%)

M = Mean. SD = Standard Deviation. n = Number of Participants.

for each factor. The subscales show a high to moderate consistency in the Chilean validation: Depression ($\alpha = .85$), anxiety ($\alpha = .83$) and stress ($\alpha = .73$). The Spanish validation obtained similar results: Depression ($\alpha = .84$), anxiety ($\alpha = .70$) and stress ($\alpha = .82$). The instrument uses a 4-option Likert-type whose range varies between 0 (“It does not describe anything that happened to me, or that I felt in the week”) and 3 (“Yes, this happened to me a lot, or almost always”). In this study, internal consistency of .95 was obtained and, with respect to the subscales, the depression ($\alpha = .91$), anxiety ($\alpha = .86$) and stress ($\alpha = .87$) scale obtained high values.

Satisfaction With Life Scale (SWLS)

This single factor scale was developed by Diener et al. (31). The questionnaire used has been adapted by Ortuño-Sierra et al. (32) and has 5 items. The format is Likert-type and ranges from 1 (Completely disagree) to 7 (Completely agree). The Spanish validation obtained a McDonald’s Omega of .85. In this study, internal consistency is high ($\alpha = .87$).

Oviedo Infrequency Scale (INF-OV)

This scale was developed by Fonseca-Pedrero et al. (33) to detect those participants who responded randomly or dishonestly. The original instrument is composed of 12 items and has a Likert-type response format that ranges from 1 (strongly disagree) to 5 (strongly agree), but only 4 items were used for this study. Those participants who answered incorrectly on more than 25% of the items (e.g., there are people who have a facility with languages) were eliminated from the final sample.

Procedure

This study complies with the Declaration of Helsinki and was approved by the Ethics Committee of the University of Valencia. Participants had to accept informed consent and in the case of adolescents under 16 years of age, parents had to consent to participation.

The questionnaire was adapted to the LimeSurvey platform. The study participants had previously collaborated with the study investigators or had expressed interest in collaborating with the research group to participate in a project on Emotional Education. Through a form of incidental sampling, schools were contacted, and the snowball sampling method was followed. Participants spent an average of 20 minutes completing the questionnaire. Data was collected between the 22nd of May and the 6th of June 2020, being both countries under during strict lockdown during this time.

The inclusion criteria were: (1) reside in Chile or Spain, (2) be between 12 and 17 years old, (3) achieve a maximum score of 25% on the Oviedo Infrequency Scale and (4) accept informed consent. The study population was Spanish and Chilean adolescents between 12 and 17 years of age.

Data analysis

For the statistical analysis, the statistical package SPSS 25.0 was used. Descriptive analyses and frequencies were carried out in the two subsamples. The statistical assumptions were checked and both samples met the assumption of normality data distribution and homoscedasticity. Multicollinearity was also checked for linear regression models and there was no multicollinearity since VIF was smaller than 4 ($VIF < 4$ (34)).

Next, the differences in emotional state, life satisfaction and worries about COVID-19 were explored using Student’s t-test according to country and gender. Finally, linear regressions were performed to predict emotional state and life satisfaction from COVID-19-related worries.

Results

The following table shows the differences in terms of the psychological variables studied between the participants from both countries. On the one hand, greater life satisfaction is observed in the Spanish sample, as well as a lower number of symptoms of depression, anxiety and stress. On the other hand,

TABLE 2. Differences in emotional state, COVID-19 and life satisfaction in Spain and Chile.

Questionnaire and Variable	Range	t	Cohen’s d	Spain M (SD)	Chile M (SD)
Emotional state (DASS-21)					
Depression	0-42	-16.08	-1.00	10.06 (9.95)	21.14 (12.16)
Anxiety	0-42	-10.76	-.67	8.22 (8.87)	14.96 (11.21)
Stress	0-42	-6.74	-.42	13.68 (10.00)	18.14 (11.24)
Satisfaction with life (SWLS)	5-35	11.11	.95	24.32 (6.44)	19.77 (2.04)
Worries about COVID-19 (W-COV)					
Health	5-25	-6.01	-.38	14.02 (4.17)	15.59 (4.08)
Economy	5-25	-12.6	-.80	12.67 (4.15)	16.17 (4.60)
Psychosocial	6-30	-10.71	-.68	15.67 (5.15)	19.35 (5.68)

The t-test for independent samples was used to analyze the differences between both samples. Significant differences ($p < .001$) were obtained for all variables. Regarding kurtosis and skewness of the variables, all values are within the range from -2 to +2, which fulfils the assumption of normal distribution.

the Chilean sample is more worried regarding COVID-19 in health, economy and psychosocially (Table 2). In relation to gender differences, it is observed that girls from Chile and Spain obtain a higher score in depressive, anxiety and stress symptoms compared to boys. Chilean and Spanish boys do not differ significantly in terms of life satisfaction compared with girls in their respective countries. In terms of COVID-19 related worries, girls in both countries have a higher worries about health, economy and psychosocial related to COVID-19 compared to boys (Table 3).

Comparing within gender by country, Spanish girls show higher life satisfaction ($M = 24.29$; $SD = 6.32$) than Chilean girls ($M = 19.81$; $SD = 6.48$). Spanish girls also show fewer depressive ($M = 11.08$; $SD = 10.02$), anxious ($M = 8.93$; $SD = 9.36$), stress ($M = 14.87$; $SD = 10.23$), health worries ($M = 14.74$; $SD = 3.84$), economic worries ($M = 13.21$; $SD = 4.04$) and psychosocial worries ($M = 16.53$; $SD = 5.03$). In comparison, the Chilean sample of girls has significantly depression ($M = 21.56$; $SD = 11.87$),

anxiety ($M = 11.54$; $SD = 11.06$), stress ($M = 18.67$; $SD = 11.1$), health worries ($M = 15.82$; $SD = 3.97$), economy worries ($M = 16.62$; $SD = 4.45$) y psychosocial worries ($M = 19.82$; $SD = 5.5$) significantly greater ($p < 0.001$). Spanish boys have higher life satisfaction scores ($M = 24.5$; $SD = 6.75$) compared to Chilean boys ($M = 21.17$; $SD = 7.89$; $p = 0.002$). Chilean boys score higher on depression than Spanish boys ($M = 15.5$; $SD = 12.78$) ($M = 7.66$; $SD = 9.12$; $p < 0.001$). However, there are no significant differences ($p > 0.05$) between Chilean boys' scores on anxiety ($M = 7$; $SD = 8.06$), stress ($M = 11.4$; $SD = 10.1$), health worries ($M = 13.65$; $SD = 4.53$), economic worries ($M = 12.37$; $SD = 4.46$) and psychosocial worries ($M = 15.13$; $SD = 5.95$) and Spanish boys' scores on anxiety ($M = 6.53$; $SD = 7.47$), stress ($M = 11.23$; $SD = 9.19$), health worries ($M = 12.76$; $SD = 4.4$), economic worries ($M = 11.66$; $SD = 4.11$) and psychosocial worries ($M = 14.14$; $SD = 5.07$).

Regarding the levels of severity of emotional symptoms, significant differences are observed

TABLE 3. Differences between boys and girls in emotional state, life satisfaction and worries about COVID-19 in Spain and Chile.

Questionnaire and variable	Spain					Chile				
	Girls M (SD)	Boys M (SD)	t	p	Cohen's d	Girls M (SD)	Boys M (SD)	t	p	Cohen's d
DASS-21										
Depression	11.08 (10.02)	7.67 (9.12)	3.63	.000	.36	21.56 (11.87)	15.50 (12.78)	3.69	.000	.49
Anxiety	8.93 (9.36)	6.53 (7.47)	3.05	.002	.28	15.54 (11.06)	7.00 (8.06)	7.36	.000	.88
Stress	14.87 (10.02)	11.23 (9.19)	3.80	.000	.38	18.67 (11.09)	11.40 (10.10)	4.83	.000	.69
SWLS	24.29 (6.32)	24.50 (6.75)	-.34	.74	-.03	19.81 (6.48)	21.17 (7.89)	-1.28	.207	-.19
W-COV										
Health	14.74 (3.84)	12.76 (4.39)	4.96	.000	.48	15.82 (3.97)	13.65 (4.53)	3.93	.000	.51
Economy	13.21 (4.03)	11.66 (4.11)	3.86	.000	.38	16.62 (4.45)	12.37 (4.46)	6.97	.000	.95
Psychosocial	16.53 (5.04)	14.14 (5.07)	4.81	.000	.47	19.82 (5.49)	15.13 (5.95)	6.16	.000	.82

M = Mean. SD = Standard Deviation. DASS-21: Emotional state; SWLS: Satisfaction with life; W-COV: Worries about COVID-19

TABLE 4. Descriptive statistics and distribution of participants to symptoms of depression, anxiety, and stress in Spain and Chile

Severity of symptoms	Spain			Chile		
	Depression n (%)	Anxiety n (%)	Stress n (%)	Depression n (%)	Anxiety n (%)	Stress n (%)
Normal	276 (52.1%)	286 (54%)	285 (53.8%)	106 (19.3%)	173 (31.6%)	245 (44.7%)
Mild	58 (10.9%)	29 (5.5%)	63 (11.9%)	55 (10%)	32 (5.8%)	57 (10.4%)
Moderate	75 (14.2%)	79 (14.9%)	66 (12.5%)	128 (23.4%)	106 (19.3%)	90 (16.4%)
Severe	32 (6%)	29 (5.5%)	48 (9.1%)	79 (14.4%)	61 (11.1%)	88 (16.1%)
Very severe	42 (7.9%)	60 (11.3%)	21 (4%)	180 (32.8%)	176 (32.1%)	68 (12.4%)
Missing values	47 (8.9%)	47 (8.9%)	47 (8.9%)	0 (0%)	0 (0%)	0 (0%)
Total	483 (91.1%)	483 (91.1%)	483 (91.1%)	0 (0%)	0 (0%)	0 (0%)

χ^2 tests were significant for all variables ($p < 0.001$).

between depression, anxiety, and stress in both countries, with a lower emotional state being found in the Chilean sample. Chilean participants have more “severe” and “very severe” cases in all three variables (Table 4).

Finally, linear regressions were carried out. Four models were analyzed for each country, all consisting of these three independent variables (VI): Worries about health, economy and psychosocial. The dependent variables were depression, anxiety, stress, and life satisfaction. As shown in Tables 5 and 6, the three COVID-19 worries explain the variance of life satisfaction and emotional state significantly, making the Chilean model more robust (Tables 5 and 6).

In Spain, the first model explains 7% of the variance of life satisfaction, the second model explains 21% of depressive symptoms, the third model explains 20% of anxiety, and the fourth model explains 23% of stress. Economic and psychosocial worries influence life satisfaction negatively, and emotional symptoms (depression, anxiety and stress) positively. Health worries affect life satisfaction and emotional symptoms negatively (see Table 5).

Regarding the Chilean participants, the first model explains 11% of the variance of life satisfaction, the second model explains 23% of depressive symptoms, the third model explains 24% of anxiety and the fourth model explains 30% of stress. All the variables of the models (VI) are significant predictors of the dependent variables, except the variable health worries, which does not influence ($p > .05$) anxiety. In

Chile, the direction of the influence works in the same way as in Spain, economic and psychosocial worries affect life satisfaction negatively, and emotional symptoms positively. However, health worries positively influence life satisfaction and negatively affect depression and stress (see Table 6).

The results show that the independent variable that most predicts the variance of the psychological variables (DV) in both countries is psychosocial worry. It is also observed that the percentage of variance explained by the model regarding life satisfaction is lower compared to emotional symptoms in both countries.

Discussion

This paper contributes to the existing literature on adolescent mental health during the COVID-19 pandemic. Specifically, the emotional state, life satisfaction and worries regarding COVID-19 have been compared among 12- to 17-years old participants in Spain and Chile. The added interest of this study is that it examines the differences between genders within each country and that the measures in this study were collected during 2020 Spring, in two of the countries with the most restrictive measures at that time. The results that emerge from the data point to a greater impact on the psychological health of adolescents in the Chilean sample compared to the Spanish sample. Higher levels of emotional distress and worry are also shown in girls compared to boys in each sample, but not in terms of life satisfaction.

TABLE 5. Linear regressions of COVID-19 worries and psychological variables in Spain.

	Life satisfaction			Depression			Anxiety			Stress		
	β	R^2	Cohen's f^2	β	R^2	Cohen's f^2	β	R^2	Cohen's f^2	β	R^2	Cohen's f^2
Model		.07	.08		.21	.27		.20	.25		.23	.30
WCOV Health	.20**			-.20**			-.15*			-.12*		
WCOV Economy	-.19**			.22***			.16**			.11*		
WCOV Psychosocial	-.22**			.42***			.43***			.48***		

WCOV-Health: Health worries due to COVID-19; WCOV-Economy: Economic worries due to COVID-19; WCOV-Psychosocial: Psychosocial worries due to COVID-19. *** $p < .001$; ** $p < .01$; * $p < .05$. Cohen's f^2 : Effect size for regression analysis

TABLE 6. Linear regressions of COVID-19 worries and psychological variables in Chile.

	Life satisfaction			Depression			Anxiety			Stress		
	β	R^2	Cohen's f^2	β	R^2	Cohen's f^2	β	R^2	Cohen's f^2	β	R^2	Cohen's f^2
Model		.11	.12		.23	.30		.24	.32		.30	.43
WCOV Health	.16**			-.13**			-.03			-.13**		
WCOV Economy	-.16**			.11*			.11*			.10*		
WCOV Psychosocial	-.31***			.49***			.44***			.56***		

WCOV-Health: Health worries due to COVID-19; WCOV-Economy: Economic worries due to COVID-19; WCOV-Psychosocial: Psychosocial worries due to COVID-19. *** $p < .001$; ** $p < .01$; * $p < .05$. Cohen's f^2 : Effect size for regression analysis

Firstly, a higher level of emotional symptoms and worries was expected in the Chilean participants compared to the Spanish, especially in girls. The results are in line with the hypotheses proposed, observing higher levels of depression, anxiety, stress and worries regarding COVID-19 in Chile. Various studies also confirm these results (8,26). Worries about COVID-19, the limitation of social activities and less time spent outdoors could explain this result (26) since the measures were more restrictive in Chile than in Spain (35). This could have caused the Chilean participants to leave home less, and therefore perceive the situation as more serious since for adolescents this situation of lockdown is unprecedented. On the other hand, some researchers propose that the increase in emotional symptoms during the pandemic could be due to worries about the health and work of family members, separation from friends, the closure of on-site schools, the increased screen time, and changes in sleep, eating and activity levels (16,36).

Regarding girls, the results support the initial hypothesis, i.e., girls show higher scores on depression, anxiety, stress and worry due to COVID-19 (economic, health and psychosocial). This result is confirmed by other studies, where girls, both generally and in a pandemic situation, show higher levels of these measures (5,10,16). This may be due to a greater tendency to show internalizing symptoms (e.g., depression, anxiety) compared to boys (37), which may have been aggravated by the pandemic.

Secondly, it was hypothesized that the life satisfaction of the Chilean participants would be lower in comparison to the Spanish participants, being lower in girls from each country. The results partially support the hypotheses, observing significant differences between the Chilean and Spanish participants. Several studies point to a decrease in satisfaction with life in a pandemic situation (8,27), however, the differences between the participants from both countries may be due to different causes. For instance, it would be understandable that the differences are due to the previous quality of life between both countries. In addition, the fact that life satisfaction is lower in the Chilean participants could be associated with a higher level of political restrictions compared to the Spanish sample (35). This is due to the fact that a higher level of restrictions can cause a greater decrease in this variable (27) because it prohibits the realization of outdoor activities that bring satisfaction with life. In addition, both countries started from different situations in relation to the pandemic. At the beginning of the sample collection, Spain had 5877 cases and 1233 deaths recorded and Chile had 8784 and 57 deaths (35). While there were deaths in Spain,

Chile showed a more rapid evolution, which can be translated into a greater concern for the situation.

Regarding gender differences, the initial hypothesis has not been fulfilled. No significant differences are observed between boys and girls in either of the two countries. Although some studies do find that girls have, in general, lower life satisfaction in normal situations (6) and in pandemic situations (8), not all studies replicate this result. Other researchers (38) do not find significant differences in terms of life satisfaction between men and women. The absence of gender differences could be since both boys and girls have stopped doing activities that provide enjoyment and meaning to their daily lives (27), both being affected equally in terms of deprivation of fulfilling outdoor activities.

Thirdly, worries were expected to be positively influencing emotional state and negatively affecting life satisfaction. The initial hypotheses have been partially fulfilled. Worries about health, economic and psychosocial factors related to COVID-19 influence depression, anxiety, stress and life satisfaction significantly. However, it should be noted that worries about health positively affect life satisfaction and negatively affect emotional symptoms, except for anxiety symptoms in Chile, where it is not significant. The rest of the studies observe a similar association between the variables (18,20), except for the sense in which health concerns influence the dependent variables. The positive-sense influence between health worries and life satisfaction; and negative-sense influence of emotional symptoms, might be explained by people who are concerned about their health expressing more self-care behaviors. Thus, allowing them to experience a sense of control over contagion, which could make them feel more satisfied with their life and with fewer emotional symptoms. It should be noted that, for some people, the pandemic has been a time of personal growth and change towards healthier lifestyles, and this cannot be ignored. However, worries about the pandemic concerning economic and psychosocial aspects may have contributed to a worsening of emotional states, as well as a decrease in life satisfaction in some participants, as shown by regression models. It is important to note that these problems could be mitigated with protector factors such as social support (20).

In addition, since anxiety and worries about the pandemic are two similar and closely related constructs, it was expected to observe high levels of both measures compared to boys. In addition, another potentially determining factor when explaining the differences between the two countries is that there was a higher proportion of girls (85.2%) compared to the Spanish sample (63.2%) in the

Chilean sample, considering the above exposed, this may have influenced the observed results. Nevertheless, this study is not without its limitations. Firstly, the type of sampling is not random, but rather accidental, since the information was only obtained from those adolescents who received information from the study online and who wished to participate. Secondly, it is worth mentioning the type of instruments that have been used, since data collection was exclusively through self-reports. For future research, it would be advisable to use objective measures or hetero-reports that complement the information obtained from self-reports. Thirdly, it should be noted that the proportion of women was higher in the Chilean sample, compared to the Spanish sample. This may have been a problem when interpreting the results because women have higher baseline levels of depression, anxiety and stress (37). Finally, the study design is cross-sectional, so the cause-effect relationship cannot be observed, but only to examine the association between the variables. In other words, it cannot be said that COVID-19 has caused the observed levels of emotional state and life satisfaction.

Conclusions and Clinical Significance

The main interest of this study is that it makes a comparison between two medium-sized samples of Chilean and Spanish adolescents regarding the problems associated with lockdown towards mental health. The results show a worse psychological state and a lower life satisfaction in Chilean participants compared to Spanish participants. In addition, emotional state and COVID-19 worries are more intense in girls than in boys. Finally, COVID-19 worries influence symptoms of depression, anxiety, stress and life satisfaction in participants from both countries. This study may contribute to increasing the existing literature regarding psychological problems associated with the pandemic and lockdown in adolescents. Following the results, a series of guidelines could be established to try to mitigate the effects of future pandemics on mental health. Overall, worries about COVID-19 may have influenced adolescent mental health, as indicated by the regression models conducted. For this reason, the development of strategies to try to mitigate worry cognitions regarding the pandemic, as well as the associated emotions, is proposed. In addition, it is suggested to carry out activities that provide life satisfaction adapted to lockdown situations, the maintenance of interpersonal contact and planned exits from the home as much as possible. These measures could contribute to a better psychological state during future lockdowns.

Regarding professionals, it is pertinent to carry out tailored and individualized interventions, since as

observed in this and in other studies, there are significant gender differences in terms of emotional state and worries about COVID-19 in boys and girls. These differences have also been found between Spain and Chile, where large discrepancies were observed, probably due to different factors. Finally, it is necessary to continue carrying out comparative studies that increase the existing literature regarding how this unprecedented situation influences adolescents from different countries, since there is still little knowledge regarding the long-term consequences that this type of situation may entail.

Disclosures

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Competing interests

The authors declare that they have no conflict of interest.

Compliance with Ethical Standards

The Ethics Committee of Research in Humans of the Ethics Commission in Experimental Research of the University of Valencia approved study consent, procedures and research protocol (Reference number: 1595575567385, July 23th 2020). Before accessing the survey, participants gave their informed consent to participate in the study.

Data availability statement.

The datasets generated and analysed during the current study are not publicly available due to the fact that they constitute an excerpt of research in progress but are available from the corresponding author on reasonable request.

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