Article

Cultural Differences between University Students in Online Learning Quality and Psychological Profile during COVID-19

Simone Nomie Sato [1],*, Emilia Condes Moreno [2], Adriana Rico Villanueva [3], Paulo Orquera Miranda [4], Pascual Chiarella [5], Jose Francisco Tornero-Aguilera [1] and Vicente Javier Clemente-Suárez [1]

[1] Faculty of Sports Sciences, Universidad Europea de Madrid, 28670 Madrid, Spain
[2] Faculty of Biomedical and Health Sciences, Universidad Europea de Madrid, 28670 Madrid, Spain
[3] Centro de Opinión Pública, Universidad del Valle de México, Ciudad de México 14370, Mexico
[4] CMUCH, Centro Mexicano Universitario de Ciencias y Humanidades, Puebla 72420, Mexico
[5] School of Health Sciences, Universidad Peruana de Ciencias Aplicadas, Santiago de Surco 15023, Peru
* Correspondence: simone.sato@universidadeuropea.es; Fax: +34-911-413-585

Abstract: During the COVID-19 pandemic, educational systems had to adapt to the social and health situation immediately. This led to the appearance of the asynchronous teaching model. Throughout the pandemic at an educational level, we can distinguish three phases, eminently online, hybrid, and face-to-face. However, the perception of educational quality in these three educational moments, considering the psychometric profile and cultural differences comparing Ibero-American countries, has not been studied. The study aims to analyze the psychological profile, and perception of quality in the teaching–learning processes at the university stage, during the three processes of educational transition during COVID-19: online, hybrid, and face-to-face. Thus, 1093 university students from Ibero-American countries were studied. Through a questionnaire, demographic, academic, and psychological variables were analyzed during three phases of the pandemic. Data suggest that Latin American students had higher levels of trait anxiety and stress perception, as well as higher levels of loneliness, during the online teaching phase (lockdown), but higher grades and higher levels of motivation compared to Europeans. Indeed, Latin Americans showed greater convenience, and preference for online learning methods. However, during the face-to-face teaching phase, European students presented greater motivation and grades, showing a greater preference for this method of learning than Latin American students. Factors such as resilience, a more unfavorable and pronounced pandemic evolution, and greater social inequities, may explain the present results. Furthermore, the present study suggests that despite the effect of the pandemic on mental health, online education is postulated as an effective teaching–learning alternative. Indeed, online teaching models have come to stay, not as a substitute, but as a tool, an essential focus of attention on these models should be conducted in European countries, while the governments of Latin American countries ensure that the infrastructures and resources are equitable to be able to correctly implement this teaching model.

Keywords: COVID-19; online teaching; hybrid education; mental health; gender differences

1. Introduction

The emergence of a novel form of coronavirus (2019-nCoV), in December 2019, in Wuhan, China, created a confusing and rapidly evolving situation that quickly spread to other provinces/regions of the country and then to the whole world, forcing governments to adopt strict measures, and adopting forced home quarantine (Chahrour et al. 2020). On 30 January 2020, the World Health Organization (WHO) declared this disease a public health emergency of international concern. By March 29th, 213 countries/territories had confirmed cases with an extremely high infection rate and relatively high mortality, measures to contain the virus and maintain medical systems without collapse were adopted

(World Health Organization 2022). To contain the spread of the virus, measures such as the immediate closure of public spaces like restaurants, cafes, and gyms, as well as in sports and educational centers were taken (Tornero-Aguilera et al. 2021). With a reduction in the number of infections, a gradual opening of these spaces made mandatory the use of face masks (Johns Hopkins Univeristy 2022). In this gradual process, one of the most affected sectors was education. From primary to higher education, adopting intensive measures to prevent and protect all students and staff members from COVID-19 (Viner et al. 2020; Bedford et al. 2020). Regardless of these measures, the impact according to UNESCO data is a total of 1.3 billion learners who were not able to attend a school or university (UNESCO 2022).

During the academic years 20/21 and 21/22, universities looked for alternatives to the traditional educational model, intending to be able to continue with the teaching–learning process. In the context of home quarantine, virtual/online education is postulated as an alternative, being globally implemented in all educational stages, undergraduate, graduate, and other higher studies. Two models were derived from this, the synchronous one, in which the teacher and the students connected at the same time to teach the class. Additionally, the asynchronous one, in which the teacher left the recorded class available to the student (Pokhrel and Chhetri 2021). In this teaching model, the practical teaching activities were postponed or substituted when they were possible. In the first six months, most of the universities from Ibero-American countries switched to this 100% online modality (Pokhrel and Chhetri 2021). The implementation of this new educational system and model, however, has had an impact on students, teachers, and institutions. Students present difficulties in the learning process, increase the workload for teachers and highlight the importance of technological resources and virtual infrastructures of institutions (Pokhrel and Chhetri 2021). Indeed, most university students and professors prefer face-to-face classes in a physical environment since it is perceived as a better interaction or brainstorming discussion during the class than in online teaching (Lovato et al. 2020). Previous authors suggested adaptation difficulties and resistance to a technological adaptation of professors to online teaching due to, inexperience, new resources, time, or feeling less interaction and discussion in online classroom teaching (Pokhrel and Chhetri 2021; Gupta 2021; Lovato et al. 2020). Furthermore, professors reported increased time to explain and greater issues in the teaching and learning process (Mustapha et al. 2021). In this line, given the rapid process of the virus, and the change to online teaching, there was no time for training professors in pedagogical methodologies (Joshi et al. 2020). Thus, it is important to consider efficient training programs for the success of the teaching–learning process and mitigate or reduce teacher stress and burnout reported during the pandemic (Christie and Ferdos 2004).

All this translates into a strong impact on mental health, creating a large stress level among the university community, professors, and students. This stress may lead to unfavorable effects on the learning and psychological health of students. Furthermore, the delivery of online education has highlighted the difficulties of some countries with lower economic potential which struggled with the availability of internet access at all homes (Leu et al. 2015), and low-income families who cannot afford to purchase a proper device for their children (Zainol et al. 2021). However, students with social, cultural, geographical, and economic constraints, including those with low proficiencies in English and technological skills, are experiencing disconnect and disengagement (Devkota 2021). There is a "digital division", thus, policies and strategies need to be formulated, exploring solutions to their respective context, and enabling the continuation of online teaching, and learning activities. Infrastructural and digital development amongst pedagogic and economic support is essential, in collaboration with governments, universities, and communities (Mustapha et al. 2021; Rashid and Yadav 2020). This "digital division" is much more apparent in countries where there is a greater difference, not only in sociocultural but also in socioeconomic and inequality terms. The countries most affected are Latin American countries, compared for example to European countries (Clemente-Suárez et al. 2022). Independently that the SARS-CoV-2 and its struggles reached Latin American countries later than European nations the

consequences and impact on the health system as well as the economic impact, was much higher (Benítez et al. 2020). In this line, a systematic review analyzed the prevalence of anxiety, depression, and insomnia in the general adult population and healthcare workers in several key regions worldwide during the first year of the COVID-19 pandemic. Mental health symptoms during the COVID-19 pandemic were worst in Africa and South Asia followed by Latin America (Benítez et al. 2020).

Yet, there is a gap in the scientific literature that addresses the educational impact of COVID-19 during three periods between European and Latin American countries. The first is eminently online teaching as a consequence of the need to continue with the teaching-learning process of the students during the quarantine/lockdown phase. A second phase called the hybrid phase, in which the sanitary restriction measures allowed students to return to classrooms with restricted capacity and sanitary safety measures (e.g., temperature control, use of masks and hydroalcoholic gels, etc.). Additionally, a third phase would be "the return to normality", in which the restriction measures were lifted, and the students were able to return to the classrooms. These moments, repeated within the framework of the Ibero-American university community, are well differentiated according to the bibliography, although they have occurred at different times given the waves of COVID-19. Thus, given the cultural and economic differences between these two territories, and their impact in terms not only of educational quality, but also on the mental health of the population, this article shed light on the psychological profile, perception of quality in the teaching–learning processes at the university stage, during the three processes of educational transition during COVID-19: online, hybrid, and face to face. The initial hypothesis was that European students had a better perception of quality in online education, especially in conditions of social restriction, such as the lockdown consequent of the pandemic period.

2. Materials and Methods

In the current study, 1093 university students from Ibero-American countries were analyzed, aged between 18 and 31 years. Subjects were interviewed via an online questionnaire for a period of 6 months, from December 2021 to June 2022. Our inclusion criteria were: enrollment in the current academic year, currently living in Ibero-American countries, and either graduate or postgraduate students from any field/area of expertise. To prevent double responses from the same person, students had to include their Student ID, which was required to match with the university database. Furthermore, data were considered strictly confidential. This research complied with the Helsinki declarations on human research and was approved by the University Ethics Committee (CIPI/22.318). All the participants digitally signed a consented participation where the aims and procedure of the study were explained. To reach the aim of the present research, a cross-sectional study was developed. The following parameters were analyzed.

2.1. Demographic and Biological Information

Participants provided information about gender, age (years), height (cm), weight (kg), Body Mass Index (BMI, Kg/m^2), country, and city. In addition, we asked about the environment, digital resources available to attend online classes during the lockdown period, and the number of cohabitants.

2.2. Academic Information

The participants provided information about the academic year, knowledge area, program, level academic (undergraduate or graduate), learning delivery modality (face-to-face, hybrid or online), average grade before the pandemic period, experience in online teaching environments and digital resources, type of classes (synchronous or asynchronous) during the pandemic period and availability of recorded classes.

2.3. Classes during the Pandemic Period

We analyzed three different moments during the pandemic period regarding the learning experience of the student: (a) Lockdown phase/online teaching: all classes were transferred to emergency remote teaching, thus all classes and learning process were delivered online; (b) Hybrid phase: mixed classes between online teaching and face-to-face classes with reduced capacity due to COVID-19 restrictions; and (c) Presential phase/face-to-face: return to classes in person without capacity limit but with COVID-19 restrictions. In each phase, to know the perception of the quality of learning, students had to answer about stress level, motivation, learning level, convenience to learn, grades, work demand, learning difficulties, attendance to synchronous classes, and preference about the received class format, using a Likert scale, where 1 means the lowest and 5 the highest score.

2.4. Psychological Factors

We analyzed the students' perception of how COVID-19 and the effects of the pandemic affected them personally regarding emotional aspects and the impact on academic activity and the perception of teaching–learning quality during the health crisis. Data were collected using (a) UCLA Loneliness Scale composed of 3 items to assess how often a person feels disconnected from others using a Likert scale, where 1 means rarely and 3 frequently; (b) STAI Scale: the State-Trait Anxiety Inventory scale composed of 6 items was applied towards differentiating between the temporary condition of "state anxiety" and the more general and long-standing quality of "trait anxiety" using a Likert scale, where 1 means not at all and 4 very much; and PSS-4: Perceived Stress Scale composed of 4 items to measure the degree to which situations in one's life are appraised as stressful using a Likert scale, where 0 means never and 4 very often.

2.5. Statistical Analysis

For the use of the methodology at the statistical level, as well as the tests used, we have followed the same tests as in previous research. Thus, the SPSS statistical package (version 21.0; SPSS, Inc., Chicago, IL, USA) was used to analyze the data. Normality assumptions were checked with a Kolmogorov–Smirnov test. To analyze differences between genders a T-test for independent samples was administered. The level of significance for all the comparisons was set at $p \leq 0.05$.

3. Results

A total of 1093 students completed the online survey. Participants' characteristics were: mean age of 23.2 ± 6.2 years, BMI (23.8 ± 4.9), 40% males and 60% females. The participants were residents of Latin American countries (Brazil, Peru, Colombia, and Mexico 76%) and Europe (Spain and Portugal 24%). The educational level that they were enrolled in was: undergraduate (90%) and postgraduate (10%), whose branch of study was Health Sciences (45%), Social Sciences (39%), and Higher studies in architecture and engineering (16%). A total of 70% of the participants reported having previous experience with online teaching, 89% declared themselves proficient in the use of digital resources, while only 61% claimed to have their digital resources for online teaching (WIFI or computer).

As shown in Table 1, regional differences were found in general stress levels during the lockdown, Latin American students presented significantly higher values than European students, as well as higher stress levels in the online classes, motivation, perceived learned, convenience to learn, grades and preferred learning method during the lockdown. Furthermore, European students presented higher values in the results of attendance to face-to-face classes, perceived learning, convenience to learn, motivation to learn, grades, and preferred learning methods during a face-to-face phase. We did not find statistical differences between groups about variables during the hybrid phase during the COVID-19 period.

Table 1. Differences between regions in the variables of perception of academic quality during the lockdown.

Variable	Europe	Latin America	t	p	95% Confidence Interval	
					Lower	Upper
General stress level during lockdown (1–10)	6.0 ± 2.7	7.6 ± 2.4	−9.225	0.000	−1.978	−1.284
Motivation during lockdown (1–5)	2.5 ± 1.2	2.7 ± 1.2	−3.132	0.002	−0.436	−0.100
Synchronous class attendance during lockdown (1–5)	3.6 ± 1.5	3.5 ± 1.5	0.799	0.424	−0.122	0.290
Stress level during lockdown (1–5)	2.9 ± 1.4	3.4 ± 1.4	−4.323	0.000	−0.616	−0.231
Motivation during hybrid phase (1–5)	2.9 ± 1.2	3.0 ± 1.3	−1.220	0.223	−0.300	0.070
Synchronous Class Attendance during Hybrid phase (1–5)	3.3 ± 1.5	3.2 ± 1.5	1.164	0.245	−0.087	0.342
Stress level during hybrid phase (1–5)	2.8 ± 1.3	3.0 ± 1.4	−1.317	0.188	−0.330	0.065
Motivation during face-to-face phase (1–5)	3.2 ± 1.5	3.1 ± 1.6	1.209	0.227	−0.085	0.356
Attendance to face-to-face classes (1–5)	3.3 ± 1.7	3.0 ± 1.7	2.328	0.020	0.044	0.514
Stress level during of face-to-face phase (1–5)	2.7 ± 1.4	2.8 ± 1.6	−0.585	0.559	−0.280	0.151
Perceived learned during lockdown (1–5)	2.8 ± 1.12	3.1 ± 1.2	−3.581	0.000	−0.465	−0.136
Convenience to learning during lockdown (1–5)	3.2 ± 1.2	3.5 ± 1.2	−3.246	0.001	−0.433	−0.107
Motivation to learn during lockdown (1–5)	2.6 ± 1.1	2.9 ± 1.2	−4.036	0.000	−0.508	−0.176
Difficulty to learn during lockdown (1–5)	2.9 ± 1.1	3.0 ± 1.1	−0.929	0.353	−0.233	0.083
Demanding activities during lockdown (1–5)	3.1 ± 1.2	3.2 ± 1.1	−1.314	0.189	−0.256	0.051
Preferred learning method during lockdown (1–5)	2.3 ± 1.3	2.7 ± 1.4	−4.321	0.000	−0.599	−0.225
Grades during lockdown (1–5)	3.3 ± 1.1	3.5 ± 1.1	−2.385	0.017	−0.340	−0.033
Perceived learned during hybrid phase (1–5)	3.2 ± 1.1	3.1 ± 1.4	0.749	0.454	−0.115	0.256
Convenience to learn during hybrid phase (1–5)	3.3 ± 1.2	3.1 ± 1.4	1.895	0.058	−0.006	0.366
Motivation to learn during hybrid phase (1–5)	2.9 ± 1.2	3.0 ± 1.4	−0.065	0.948	−0.197	0.184
Difficulty to learn during hybrid phase (1–5)	2.7 ± 1.2	2.7 ± 1.3	−0.430	0.667	−0.221	0.142
Demanding activities during hybrid phase (1–5)	3.0 ± 1.2	3.0 ± 1.4	−0.710	0.478	−0.250	0.117
Preferred learning method during hybrid phase (1–5)	2.8 ± 1.4	2.8 ± 1.5	0.108	0.914	−0.197	0.220

Table 1. *Cont.*

Variable	Europe	Latin America	t	p	95% Confidence Interval	
					Lower	Upper
Grades during hybrid phase (1–5)	3.2 ± 1.2	3.1 ± 1.4	1.200	0.230	−0.075	0.310
Perceived learned during face-to-face phase (1–5)	3.7 ± 1.3	3.2 ± 1.7	4.775	0.000	0.315	0.755
Convenience to learning during face-to-face phase (1–5)	3.3 ± 1.4	3.0 ± 1.6	2.898	0.004	0.105	0.545
Motivation to learn during face-to-face phase (1–5)	3.3 ± 1.4	2.9 ± 1.6	3.285	0.001	0.151	0.598
Difficulty to learn during face-to-face phase (1–5)	2.6 ± 1.3	2.5 ± 1.5	0.234	0.815	−0.178	0.226
Demanding activities during face-to-face phase (1–5)	3.1 ± 1.2	2.9 ± 1.6	1.824	0.068	−0.015	0.410
Preferred learning method during face-to-face phase (1–5)	3.4 ± 1.5	3.0 ± 1.7	3.707	0.000	0.209	0.679
Grades during face-to-face phase (1–5)	3.4 ± 1.3	3.0 ± 1.6	3.562	0.000	0.177	0.611
Preferred learning method General (1–5)	1.8 ± 1.1	1.7 ± 1.1	1.660	0.097	−0.024	0.283

Table 2 also shows differences between regions found regarding psychological factors such as STAI—State-Trait Anxiety Inventory scale, UCLA—loneliness scale, as well PSS—perceived stress scale. Psychometric profiles suggest that Latin American students have a profile marked by higher levels of trait anxiety and stress perception, as well as higher levels of loneliness

Table 2. Differences between regions of the psychological profile of students.

Variable	Europe	Latin America	t	p	95% Confidence Interval	
					Lower	Upper
STAI (1–4)	13.2 ± 4.1	14.8 ± 4.4	−5.177	0.000	−2.203	−0.992
UCLA (1–3)	4.9 ± 1.9	5.6 ± 2.0	−5.397	0.000	−1.035	−0.483
PSS-4 (0–4)	6.8 ± 3.2	7.9 ± 3.1	−4.862	0.000	−1.534	−0.652

(STAI)State-Trait Anxiety Inventory scale; (PSS-4) Perceived Stress Scale; (UCLA) Loneliness Scale. Differences between genders ($p < 0.05$).

4. Discussion

Given the cultural and economic differences between European and Latin American countries, and the impact in terms not only of educational quality, but also on the mental health of the population, the objective of the present article is to shed light on the psychological profile, perception of quality in the teaching–learning processes at the university stage, during the three processes of educational transition during COVID-19: online, hybrid, and face to face in European and Latin American countries. The initial hypothesis was that European students had a better perception of quality in online education, especially in conditions of social restriction, such as the lockdown consequent of the pandemic period. The initial hypothesis was not compiled since Latin American students showed a higher perception of teaching quality during the online phase while European students had a better perception of quality during the face-to-face teaching phase.

In the present study, it was found that Latin American students presented a psychological profile marked by higher levels of trait anxiety and stress perception, as well as higher levels of loneliness during the online phase (lockdown). In this line, during the lockdown period, thus during online teaching, Latin American students presented higher levels of general stress. Likewise, their levels of motivation during this period, as well as their grades, were higher. Showing that these same students found greater convenience and preference for this online learning method. This can be explained due to better resilience and adaptability of the citizens of Latin American populations. Latin American students may be more resilient than European students due to the greater social, economic, political, and health vulnerability experienced in their lives in these countries (Dias et al. 2022; Zeng et al. 2022). Yet, resilience is an important ability that refers to an individual's ability to adapt and to develop normally after encountering illness, frustration, trauma, adversity, or another major stress environment (Prime et al. 2020). This stable psychological quality enables an individual to maintain mental health and a happy life when faced with various pressures and to recover from stress, danger, and other adversities. Individuals with higher levels of resilience attain better mental-health outcomes following life adversity and major threats (Southwick et al. 2005). This becomes more important in periods such as the one studied, which is why, even in even worse conditions, and with greater states and perception of stress, Latin American students presented better grades during the period of online education.

Moreover, resilience has an impact on the learning experience, academic performance, course completion, and, in the long run, professional practice (Southwick et al. 2005). This may also explain the better grades of Latin American students during the lockdown phase. Furthermore, resilience and positive coping strategies can resist stress and improve personal well-being (Southwick et al. 2005). Yet, resilience is not an individual personality trait nor an immutable construct, but a psychological process that can be triggered at certain moments of life, it must be understood as a dynamic interaction between individual characteristics and the complexity of the ecological context (Poletto and Koller 2008). Researchers attribute resilience to stress resistance, but also recovery and overcoming, related to the conception of adaptation and social adjustment, based on studies on invulnerability (Brandão et al. 2011). Therefore, future lines of research should focus on the study of the resilience of European students. Possible interventions from the government would help young students.

On the other hand, European students presented higher grades in the face-to-face classes model. In this line, in a recent study among European students, 84.0% considered that the university has not adequately adapted to online teaching and preferred a face-to-face teaching–learning model both for quality and convenience (Villa et al. 2020). The fact that students value face-to-face classes, or hybrid teaching, more positively than fully online classes maybe because it is considered a more effective modality for the resolution of doubts, the development of learning, and participation and interaction (Sousa Santos et al. 2021). Studies analyzed that there is a lower level of emotional engagement online relative to the traditional learning environment among university students (Clemente-Suárez et al. 2021a). These studies showed that this decrease in students' emotional engagement is largely explained by the concurrent decrease in the level of human interaction (either student–student or student–instructor) upon the passage from the traditional to the online learning environment (Sveinsdóttir et al. 2021). The mental health of the students was greatly compromised during this time with consequences for the return to the new normal. Authors suggest that there is a negative impact of the COVID-19 pandemic on the mental health of students in the period after returning to face-to-face classes during the COVID-19 pandemic (Wei et al. 2022). Furthermore, the enormous challenges students faced can explain the influencing mechanism of students' mental health and this impact on the perceived difficulty to learn during face-to-face classes. Indeed, an increase in study demands, time pressure, emotional exhaustion, perceived social support, and student engagement will lead to a risk increase of student burnout, resulting in mental health problems (Clemente-Suárez et al. 2021b).

The stress level, anxiety, and loneliness during the lockdown period were higher among Latin American students than European students. According to UNESCO (2022), university students from several countries reported moments of great stress due to the unpredictability of the pandemic situation, difficulties in learning from the computer, and the impossibility of close contact with colleagues and professors (Clemente-Suárez et al. 2021b). The measures adopted during the pandemic period brought additional challenges to these students and, therefore, had a greater impact on their lives (UNESCO 2022). Latin America is characterized by high heterogeneity within and between countries, where both levels of development and inequality reveal important asymmetries that have put the magnifying glass in the action of the governments, in turn raising pre-existing social pressures. However, if the region is home to particular realities, in general, they also face several common challenges such as the weakness of health systems and the inexistent or limited mechanisms of social protection, high labor informality, low specialization in work, high levels of little or no planned urbanization (Pereira and Oliveira 2020). At the same time, the pandemic has exalted other forms of inequality that could persist across a wide spectrum, such as the digital divide, which fundamentally limits access to online education and remote work overall low-income populations, expanding the social inequalities and levels of poverty that the Latin American region has been facing for decades (Rosario 2021). All this without doubt has limited the effectiveness and the margin of the responses that many Governments of the region have taken, the one that has been seriously nitrogenized, turning into the epicenter of the COVID-19 pandemic in May 2020 according to the World Organization Health (WHO). Poverty and social exclusion expose a great fringe of the population to the harmful effects that they bring, especially to their physical and mental health (Pereira and Oliveira 2020). In this sense, any change in the environment commonly increases the level of tension and interferes with the normal patterns of response of individuals; it is considered a stressful life event and is associated with physical and mental health symptoms. Faced with this phenomenon, individuals, families, groups, and communities must deploy several resources to resist the clashes of the different situations that they strike, demonstrating a great capacity to overlap, face adversity, persist, and positively resurgence (Suazo 2016).

A cross-sectional study was conducted during the first wave of COVID-19 with European students. Results suggest that all European university students were suffering from poor mental health, considerably below pre-pandemic norms. However, students believed that their government had provided effective leadership during the COVID-19 pandemic (Allen et al. 2022). Yet, when compared to other studies, authors suggest that the negative emotions, anxiety, and stress experienced by the students were higher in South America, Oceania, followed by North America, and lastly, Europe, consequent with our present results (Aristovnik et al. 2020). However, in the same study, it was the European students, those most concerned about the loss of their leisure time and activities, e.g., sports and cultural activities, parties, and hanging out with friends. In addition, they reported that the new learning environment has increased their workload; therefore, face-to-face classes and the return to being present in the university are one of the aspects most valued by this group of students as our data suggest.

The high level of stress as discussed above is related to psychological factors and social concerns as the outcome of student experiences, feelings of loneliness, fear of a pandemic, worries about health and the health of loved ones, and lack of communication with classmates and relatives as several studies suggest (Motte-Signoret et al. 2021). Authors showed that class attendance was significantly greater for online live classes rather than recorded online presentations during the lockdown (Garg et al. 2020). The convenience of online classes has main advantages because it saves students time on traveling, provides flexibility, the ability for students to learn at their own pace, and makes it more comfortable (Hussain et al. 2021; Chinelatto et al. 2020; Dost et al. 2020). Studies demonstrated that most of the students agreed that the sessions were intellectually challenging, that the instructors were dynamic, and encouraged students to participate (Realyvásquez-Vargas

et al. 2020). The shift to online learning affected students' academic performance and caused a lot of intellectual fatigue due to the increased workload (Aristovnik et al. 2020). The online learning environment increases the time students spend working with video display terminals and the prevalence of dry eye symptoms in the university-based population (García-Ayuso et al. 2022). Studies have not found significant differences in student learning performance online did not differ significantly from that of in-class face-to-face the year before (Hussain et al. 2021). Online teaching had an overall positive outcome on student satisfaction, and teaching quality relied on teaching, cognitive, and social presence rather than technology. However, technology remains an important platform that supports teachers' educational activities (Hollister et al. 2022).

4.1. Practical Application

After the COVID-19 pandemic, the university authorities should continue to invest in online education to enhance the learning experience. Proper training of professors regarding digital skills and improved student–teacher interaction must be conducted. For disadvantaged students, the availability of digital infrastructure with proper internet availability and access to technology is essential, thus governments, especially in countries of Latin America should give a special focus, by offering public hot spots and facilities for students to connect, or developing a free public intranet among the cities for easy and free connection.

Furthermore, students are likely to suffer from stress, anxiety, depression, and loneliness so it is necessary to provide emotional support to students. It is possible to conduct both active and passive mental health interventions. Offering in each case a style of therapy either face-to-face or with the use of technological means such as telephone lines or videoconferences. In this line, Latin American countries seem more susceptible to mental health problems related to COVID-19 restrictions and impact; thus, governments should also have a special focus. However, in general terms, a preventive action plan could be developed to ensure the correct intervention of mental health support and assistance of students independently of their origin.

4.2. Limitations of the Study and Future Research Lines

It should be considered that the recording of the data used in this study was subject to social desirability bias, common among interviewees. It could also have been affected by recall bias since self-reporting requires cognitive tools from the area of memory.

In addition, this research project was conducted at different phases during the pandemic, and data were also collected in different countries and even continents. This meant that the progression of the disease was not the same everywhere and, therefore, the results in each country may indicate different stages. However, the results obtained are still relevant since they allow us to analyze the consequences of the pandemic concerning the quality of online teaching by comparing European and Latin American countries.

This study provides answers to important questions and also allows us to point to future questions such as determining what are the factors that may be useful for making comparisons between different educational agents, or how has been the impact of cities of the same country, between countries, and more globally.

Above the limitations, the findings of our global survey are extremely important because we analyzed the impacts of the COVID-19 pandemic on the perception of quality in online teaching. Therefore, the present study importantly fills this gap and points to avenues for future research, such as (1) focusing the further analysis on each studied aspect/element of student life separately and in more detail from different (comparative) perspectives on regional, national, and/or institutional levels; and (2) extending a similar survey to teaching staff at higher education institutions by performing a global study on the impact of the COVID-19 pandemic on their professional and private lives.

5. Conclusions

In the period of just a few months, the COVID-19 pandemic has radically transformed the lives of people around the globe, affecting all sectors, especially education. In this line, the present study provides meaningful insights into students' satisfaction and perception of different aspects of their academic experience during the pandemic.

The results present the prevalence of mental health symptoms, loneliness, stress, and anxiety symptoms, among higher education students, being higher in Latin American students during the COVID-19 pandemic. Yet, these students preferred online teaching, showing higher grades and preference for this method compared to Europeans. On the other hand, European students preferred face-to-face teaching.

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