Mental health and uses of technology in the university context. A review of the literature

Salud mental y usos de la tecnología en el contexto universitarios. Una revisión de la literatura

关于大学生精神健康和技术使用的文献综述

Психическое здоровье и использование технологий в университетском контексте. Обзор литературы

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Abstract

This article aims to analyse the different ways in which digital technologies affect the health of young people. To this end, a literature review was carried out in two stages. Sixty-five (65) scientific publications were studied and processed in two successive stages. In the first stage, 30 studies exclusively available in the ScienceDirect Database were processed, revealing a conceptual relationship in the field of mental health and the use of digital technologies. In the second stage, only sources including the subject of COVID-19 and its relationships with mental health and the use of digital technologies were included, in a context of differentiated contributions in the university sphere. The thematic content of the literature was analysed and the results summarized as follows: 1) the use of digital technologies has both positive and negative effects on young people, but there are significant differences in the number of publications and the effects described; 2) during the Pandemic, mental health problems have worsened in young people who use technologies due to causes associated with confinement, learning environments and those related to the fear of contagion.

Keywords: behaviour, COVID-19, depression, stress, family, social media, Internet, mental health, sleep.

Resumen

El objetivo del presente artículo es analizar las diferentes formas en que las tecnologías digitales afectan a la salud de los jóvenes. Para lograr esto, se realizó una revisión de la literatura siguiendo dos etapas. Fueron estudiadas 65 publicaciones científicas y procesadas en dos etapas sucesivas. En la primera, se procesaron 30 trabajos disponibles, de manera exclusiva, en la Base de Datos ScienceDirect y que evidenciaron una relación conceptual en el ámbito de la salud mental y el uso de las tecnologías digitales. En una segunda etapa, se trabajó solo con las fuentes que incluyen el tema de la COVID-19 y sus relaciones con la salud mental y el uso de las tecnologías digitales, en un contexto de aportaciones diferenciadas para el ámbito universitario. Mediante una síntesis que recoge el análisis de contenido temático de la literatura se exponen los siguientes resultados: 1) el uso de las tecnologías digitales provoca efectos positivo y negativos en los jóvenes, pero se manifiestan diferencias significativas en el número de publicaciones y los efectos descritos; 2) Durante la Pandemia se agudizan los problemas de salud mental en los jóvenes que utilizan las tecnologías por causas asociadas al confinamiento, ambientes de aprendizaje y las propias del miedo al contagio.

Palabras Claves: Comportamiento, COVID-19, Depresión, Estrés, Familia, Redes Sociales, Internet, Salud mental, Sueño.

摘要

本文的目的是分析数字技术影响年轻人健康的不同方式。为此我们进行了以下两个阶段的文献综述。在以下两个阶段中研究和分析了65份科学出版物。首先,专门从ScienceDirect数据库中获得30篇有关心理健康和数字技术使用方面概念关系的文章。在第二阶段,我们仅对在大学环境关于COVID-19主题及其与心理健康和数字技术使用之间关系的资源进行分析。我们通过对文献主题内容进行综合分析得出以下结果:1)数字技术的使用对年轻人产生正面和负面影响,但在文章的数量和所描述的影响上存在显着差异;2)在疫情期间,由于隔离、学习环境以及担心传染的原因,使用数码技术的年轻人心理健康问题有所恶化。

关键词:行为, 新冠肺炎, 沮丧, 压力, 家庭, 社交媒体, 互联网, 精神健康, 梦。

Аннотация

Цель данной статьи - проанализировать различные способы влияния цифровых тех-
нологий на здоровье молодых людей. Для этого был проведен двухэтапный обзор
литературы. Шестьдесят пять научных публикаций были изучены и обработаны в
два последовательных этапа. На первом этапе были обработаны 30 статей, доступ-
ных исключительно в базе данных ScienceDirect, которые показали концептуальную
взаимосвязь в области психического здоровья и использования цифровых техно-
логий. На втором этапе мы работали только с теми источниками, которые включа-
ют тему COVID-19 и ее связь с психическим здоровьем и использованием цифровых
технологий, в контексте дифференцированного вклада для университетской среды.
Посредством синтеза, в котором собран тематический контент-анализ литературы,
представлены следующие результаты: 1) использование цифровых технологий ока-
зывает положительное и отрицательное влияние на молодых людей, но существуют
значительные различия в количестве публикаций и описываемых эффектах; 2) во
время пандемии проблемы с психическим здоровьем ухудшаются у молодых людей,
использующих технологии, из-за причин, связанных с заключением, учебной средой
и страхом заражения как такового.

Ключевые слова: Поведение; COVID-19, Депрессия, Стресс, Семья, Социальные сети,
Интернет, Психическое здоровье, Сон.

Introduction

Social change accelerated by digitisation has resulted in changing conditions for hu-
man coexistence. For almost two decades, research evidence has shed light on the
profound human impact that technological developments have had on the behaviour
and well-being of university students. Literature contains more and more positive and
negative associations between the use of technology by young people and mental
health and physical well-being. The outbreak of the COVID-19 pandemic has caused
young people to use technologies intensively during periods of confinement and the
continuity of the teaching-learning process in these conditions.

The digitisation of education brought with it the intergenerational coexistence be-
tween migrant teachers and native students, which is not always healthy in the eyes
of teachers, who have traditionally acted as transmitters of knowledge. The urgent
adoption of inverted learning in current times is the result of the widespread use of
digital technologies. The terms "Digital Natives" and "Digital Immigrants" are used to
distinguish between the generations born after the digital age, who are baptised as
Digital Natives, and those that approach technology as a learning process are called
Digital Immigrants (Peñalva et al., 2017).

The study by Gulsecen et al. (2015) sheds light on the skills Digital Natives require
to use technologies. Those born in the 1980s and later have had the advantage of
becoming familiar with digital media at a very early age. Digital media offer sufficient
attractive recreational elements to capture human attention and promote their use,
since their usefulness can be verified immediately. However, the stressors correspond
to the associations between the condition of digital native and four types of addic-
tion to Information Technologies that differentiate this group, which reveals the need
to adopt a multidimensional and individual approach in the study of digital nativity
(Peñalva et al., 2017).

Scientific evidence shows that children and young people have been successfully empowered by digital technologies and, for the most part, assume the role of transmitters of this knowledge demanded not only by their peers but also by people of more advanced chronological age, including their teachers. These social groups experience specific degrees of techno-digital vulnerability worthy of in-depth analysis. The specific problems of young people have been highlighted by authors such as Kim et al. (2018).

Either way, the digitisation of education derives from the cumulative process of scientific development, but, at the same time, reveals the keys to accelerated social change and its implications for life and well-being. The amount of information that must be processed daily, the loss of stability and the feeling that the time in our lives is constantly being swept away, impacts the quality of individual, family and social life in general.

Technologies have gone from being used periodically as a means to support learning to being used continuously and intensively, which not only stresses the professional development of teachers, but also the health and well-being of students. Technological applications are introducing a new degree of responsiveness and flexibility in educational processes given the urgency of students to incorporate them in all their learning activities. The use of technology has increased in line with the needs of education (Al-Hariri & Al-Hattami, 2017).

In the context of COVID-19, the social isolation of such intensive and imposed magnitudes has given rise to particularly dramatic conditions in the social context, in the most diverse sphere of life. In such circumstances, human resilience relies, to an extent rarely seen before, on strong social connections, as well as active participation in groups and communities (Bzdok & Dunbar, 2020). Technological media, as a source of refuge for students in the midst of the global pandemic, has given rise to many re-adaptation challenges during periods of confinement. It represents a radical change in relations where social networks are accessed mainly to obtain support, entertainment and connect with others (Nabity-Grover et al., 2020).

The growing interactions of human beings with digital technologies make them vulnerable to impacts on behavioural-related aspects of health, such as, for example, depression, stress, family functioning, mental health and sleep. This article aims to analyse the different ways in which digital technologies affect the health of young people and teachers in university contexts.

Method

The bibliographic review was carried out between 2016 and 2020 and consisted of two stages and two rounds of discussion of the results obtained by the researchers, framed before the pandemic and during the period of social distancing. The first stage took into account publications that linked the use of technologies with health and well-being in young people between 2016 and 2019. The second phase (2020) covered publications that analysed the subject of mental health in the sphere of university education initiated in the context of the COVID-19 pandemic, making use of technologies through virtual and distance education in conditions of confinement. As part of the process, the researchers discussed the search procedures that should be followed in the review, in which the following were determined: 1) Keywords: technologies, teaching, environment, e-learning, behaviour, depression, stress, social networks; family, health, mental [health], sleep, COVID-19. In addition to identifying the afore-

mentioned keywords, the frequency with which these words were found in each text was quantitatively determined; 2) the search period: 2016-2020, but within this stage, the studies related with the context of COVID-19 were identified; 3) database: Science-Direct, because this database includes publications from the fields of both education and also health and technology.

The following inclusion criteria were used: 1) studies related with the keywords in adolescents, as this is the stage prior to entering higher education, and in university students; 2) studies that addressed the issue of mental health and digital learning in young university students and teachers in conditions of confinement due to COVID-19.

After taking into consideration the above criteria, 39 studies were identified: 22 in the first stage and 17 in the second stage. It was confirmed that these analyses were carried out in different disciplines in the global context, but, at the same time, converged in disciplines such as Pedagogy, Psychology and Health in the analysis of this topic. Tables 1 and 2 show the articles selected between 2015-2020 and the frequency of appearance of the keywords in the search.

Table 1

Selected studies between 2015-2020

Authors	Behaviour	Depression	Stress	Family	Social networks	E-learning environments	Mental health	Sleep
Alva De la Selva (2015)			X			X		
Aparicio et al. (2020)				X	X		X	
Forman et al. (2019)	X		X			X		
Jenkins et al. (2018)	X	X	X	X	X		X	
Kesharwani (2020)	X		X			X		X
Koyama et al. (2020)	X	X	X	X	X		X	X
Lissitsa and Chachashvili-Bolotin (2018)	X	X	X	X	X	X	X	
Luo et al (2020)	X	X	X	X		X	X	X
Ni et al. (2018)					X	X		
Orzech et al. (2016)	X	X	X		X	X	X	X
Rock and Barrington et al. (2016)	X	X	X	X	X		X	
Romero-Ruiz et al. (2017)	X	X		X	X	X		
Ryhtä et al. (2020)			X	X		X		

Authors	Behaviour	Depression	Stress	Family	Social networks	E-learning environments	Mental health	Sleep
Seo and Je (2018)	X	X	X	X				
Spivey et al. (2020)			X				X	X
Van der Velden et al. (2019)		X	X		X	X	X	X
Vaterlaus (2015)						X	X	
Wang & Leif (2018)	X				X	X	X	
Wang, Huang (2020)	X		X		X	X		
Wolfers et al. (2020)	X	X	X	X	X	X		X
Kend-Chieh and Po-Hong (2020)	X				X	X		
Yin et al. (2020)	X	X	X	X				
Total	15	11	16	11	13	15	11	7

Note. This table shows the frequency of appearance of the concepts in the selected studies

Table 2

Studies in 2020 incorporating the influence of COVID-19

Authors	Behaviour	COVID 19	Depression	Stress	Family	Social networks	E-learning environments	Mental health	Sleep
Ahmad et al. (2020)		x		X			X	X	
Besser et al. (2020)	X	X		X	X	X		X	X
Bzdok and Dunbar (2020)	X	X		X				X	
Hasan and Bao (2020)		X		X		X	X	X	
Haider and Al-Salman (2020)		X		X					
Kaparounaki et al. (2020)		X	X			X		X	X
Kapasia et al. (2020)		X	X	X	X		X		
Khan et al. (2020)		X		X		X	X	X	
Mishra et al. (2020)		X		X		X	X	X	

Authors	Behaviour	COVID 19	Depression	Stress	Family	Social networks	E-learning environments	Mental health	Sleep
Oosterhoff et al. (2020)	X	X	X	X	X	X		X	
Odriozola et al. (2020)		x	x			X		x	
Rzymski and Nowicki (2020)	X	X				x		X	
Savitsky et al. (2020)		X			X				
Saefi et al. (2020)		X		X					
Trung et al. (2020)	X	X			X	x			
Wang, Yang et al. (2020)	X	X	X	X	X	X		X	
Zhai and Du (2020)	X	X	X	X	X	x		X	X
Total	7	17	6	12	7	12	5	12	2

Note. This table shows the frequency of appearance of the concepts in the selected studies

The articles presented in both the first and second periods reveal a high frequency of the terms "stress", "e-learning environments", "social networks" and "mental health". The thematic content of each study was analysed in rounds of meetings attended by the researchers who carried out the study virtually. The product delivered by each researcher consisted of an argued proposal for the articles that had to be included in the final research report. The open debate among all the researchers frequently led to re-readings by other researchers in the team to find more accurate conclusions. The rounds helped to avoid data contamination, while the two rounds were carried out at reasonable times, all in the morning, in appropriate conditions, i.e. in a proper meeting room, with varied colours, ventilation, temperature, lighting, and absence of interruptions, among others.

Results

Technical-digital relationships and mental health in adolescents and young university students (first stage)

Depending on the use made of digital technologies, these will have either a positive or a negative effect on the health of users. The benefits of such technologies include, for example, the possibility of treating mental health problems in young people. This can be seen in the results reported by Jenkins et al. (2018), insofar as mental health challenges are the main well-being problem affecting young people worldwide. To better respond to this challenge, the aforementioned authors stressed that many experts insist on adopting a more inclusive health promotion approach. This is achieved by allowing young people to participate directly in interventions aimed at promoting

mental health among their peers through social networks. This direct enabled them to strengthen leadership skills, self-confidence, knowledge development, skills and community change to promote long-term health and development.

A positive aspect is also associated with the formation of Social Networks for young people. Rock et al. (2016) highlight that young people exchange social support and influences within the framework of their respective social networks, thus enabling them to better cope with the stress and sadness associated with poverty. The adoption of Internet and digital uses can constitute an important channel for enhancing the life satisfaction of the weakest social groups from low economic strata. Many factors affect life satisfaction, such as income, religiosity, sociability and health problems, and it is precisely the latter that can be changed relatively easily through digital literacy (Lissitsa & Chachashvili-Bolotin, 2016).

In contrast to this result, Van der Velden et al. (2019) added that mental health problems are still associated with the hours spent using social networks, quality of sleep in the short or long term and loneliness. Orzech et al. (2016) fear that, despite the demonstrated importance of sleep quality for the physical and mental health of young people, the number of studies that demonstrate their correlation with the use of digital media is still insufficient.

In this regard, Wolfers et al. (2020) present some observations obtained in previous research on stress and the use of digital media, mainly regarding the effects on different people. They conclude that experiencing more stress than usual coincides with nomophobia, which is defined as the anxiety or fear of not having access to a mobile phone. It was also reported that more active use than usual of the social network Facebook by young people between 18 and 39 years old was associated with the onset of higher levels of stress six months later. Such health effects are usually found indistinctly in technology users, regardless of their digital condition, i.e. they are observed in both Digital Immigrants and Digital Natives, in whom two aspects have an influence: chronological age after the digital boom; and a proactive social attitude towards digital media (Wang & Leif, 2018).

The results of this study characterize Digital Natives with easily distinguishable behavioural attributes. In any case, these are people who rather than being born at the time or after the techno-digital boom, have a specific social projection, a condition somewhere between digital nativity and addiction to information technologies; hence, its effects on mental health cannot be ruled out. Other recent studies shed light on the relationship between digital nativity and mental health in comparison to people who have embraced technology as a learning challenge. In this sense, some authors confirm the existence of a pattern of different effects between Digital Natives and Digital Immigrants, with respect to the mechanism of sequential updating of beliefs, the results of which remain relatively stable over time (Kesharwani, 2020).

On the other hand, there is a growing trend in youth behaviour anchored in withdrawal from the surrounding world due to the excessive use of technology, a phenomenon that leads to other equally serious mental health problems (Aparicio et al., 2017). The authors highlight the influence of social networks on the exaltation of body beauty ideals, achieved through risky changes in diet, particularly more evident in women. In addition to the foregoing, social networks entice people to publish personal data that, in the eyes of Internet users, facilitate the composition of a social view that threatens privacy, since it is becoming easier and easier to obtain intimate information about young people from data available on networks (Ni et al. 2018).

Indeed, the effects of technologies have been unexpected and occur so quickly that many authors question the individual's ability to assimilate them in a healthy manner, so much so that certain advances in computer technology designed to facilitate the quality of life of citizens can instead have discomfort-inducing effects (Forman & Zeebroeck, 2019). An example can be found in the formation of Social Networks, in which the intensity of exchanges may potentially impact mental health, particularly in aspects relating to self-esteem. Factors such as gender and economic status can be determining factors in the formation of such networks (Rock et al., 2016).

Social networks can stimulate constructive exchanges between peers and thus help reinforce learning and social support, but it is worthwhile observing the behaviour of young users when differences in economic status are involved. If digital technology has truly became a driving element in communication between young peers and, its growing sophistication tends to reveal class attributes of socio-economic status, then more accurate pedagogical interventions are justified, capable of preventing the levels of anxiety that affect so many young people today, marked by economic inequalities (Alva De la Selva, 2015).

Weak economic status is a condition that can potentially induce shame, apathy, sadness, among other feelings, existential self-devaluations that threaten the flow of frank and liberating expressions of communication, and all in a stage of life characterised by high sensitivity to the opinions of others. It is worthwhile mentioning the observations of Koyama et al. (2020), who confirm that social networks can affect the physical and mental health of adolescents. Their study confirmed the existence of an association between the diversity of social networks and physical and mental health, and the authors observed differences in their impact according to the degree of influence perceived in class. Time spent browsing the web was found to be negatively related to life satisfaction and positively related to loneliness.

In contrast to these results, the adoption of the Internet and the use of digital technologies enhance life satisfaction, but only after controlling socio-demographic variables, sociability and health status (Lissitsa & Chachashvili-Bolotin, 2016). The necessary interaction with technology for learning requires spending an excessive amount of time using technology. It compromises the health of young people aged between 18 and 25 even more as it occurs in a stage of life culminating in the consolidation of biological, psychological and social development, crucial for the enjoyment of a long and healthy life (Vaterlaus et al., 2015).

In any case, the excessive time spent on social networks, far from facilitating the healthy contributions of well-proportioned recreation, causes substantial alterations in normal eating schedules (Spivey et al., 2020). Thus, in this study first-year pharmacy students face various stressors capable of affecting their academic performance. Given the relationship between perceived stress and academic performance, the researchers recommended implementing strategies in which students learn to manage their transition from preparatory to university level in a healthy and academically successful way.

In this connection, Orzech et al. (2016) also analysed the poor quality of sleep as a consequence of the use of digital media in the hours before going to bed, specifically in university students. Sleep is known to have a restorative effect on the body and therefore on academic performance. Its consequences can also be observed in the quality of interpersonal relationships. Thus, educational environments can become tenser as a result of the irritability caused by sleep deficit. The consequences of inefficient sleep

require greater efforts on the part of teachers to obtain the attention of the affected students, without ultimately achieving entirely satisfactory learning outcomes.

In extreme cases, students may display drastic withdrawal and family loneliness as a result of the excessive use of technologies, and depressive symptoms may be identified. In their analyses, the authors emphasized the central role of family as the fundamental nucleus of the educational process; hence, the importance of the parental control on the use of digital technologies by their children, which highlights the evident need to favour and develop a culture in this direction (Romero-Ruiz et al., 2017).

Consideration must also be given to the findings reported by Luo et al. (2020), who examined the quality of teacher-student relations and relationships with parents, as well as the related level of academic stress reported by students. Social support in educational institutions can help to improve not only academic results but also relationships with teachers, and these elements appear to be strongly related with lower levels of academic pressure. When students perceive a good relationship with their teachers, but the level of emotional warmth from parents is low, students experience greater academic pressure.

Social networks caused higher dependency levels in young people to the extent of causing different health problems manifested in eating disorders and more sedentary lifestyles associated with depressive conditions (Seo & Je, 2018). Depression fuels contrasting behaviours with university groups and difficulties in social insertion. There is a correspondence between poor interpersonal relationships and depression and, in extreme cases, suicide.

Social anxiety can also occur as a result of the digital divide that exists within university groups. This problem must be analysed taking into account economic inequalities. It is also important to consider he factor associated with the condition of digital nativity or digital migration, based on more up-to-date criteria on behaviour from two related models: the Technology Acceptance Model; and the Unified Theory of Technology Acceptance and Use (Kend-Chieh & Po-Hong, 2020). At this point, it is worthwhile highlighting the need for teachers to have a high degree of competence in digital pedagogy. The possession of digital pedagogy skills allows university teachers to teach future professionals in the complex circumstances prevailing in universities today, and ensure that graduates are digitally competent (Ryhtä et al., 2020).

Although online accompaniment for teachers is essential to ensure that students feel duly assisted in this difficult adaptation process, it is no less true that teachers themselves are susceptible to situations that may also have a somewhat adverse impact on their job satisfaction and creativity (Wang et al., 2020). In this respect, Yin et al. (2020) show how the stress resulting from organisational shortcomings and the new challenges faced in professional practice are negatively associated with teacher self-efficacy. Whereas the quality of students is positively related with the teacher's perceived self-efficacy, hence the importance of keeping in mind the different factors that influence the perception of self-efficacy on the part of university professionals.

Health crisis, university, emerging technological transition and mental health

The health crisis has had a dramatic and unexpected impact on both society and university education. The university system has been forced to restructure quickly,

prompting the need for impromptu and accelerated learning. Teachers in adult age, digital immigrants, are forced to learn how to interact using technology, which is often not ideal for accessing certain knowledge, and which must also do so quickly.

Although the intergenerational coexistence between Digital Immigrants and Digital Natives has yielded evidently enriching exchanges of learning in both individual and family spheres and in society in general, it has also inevitably given rise to confrontation and has even had implications for health, even more so during the current period of confinement. Teacher who are Digital Immigrants have had to make a greater effort to manage the massive and abrupt demand for online teaching without leaving room for other teaching options, requiring them to make considerable efforts to address these challenges.

Findings such as those reported by Besser et al. (2020) underscore the importance of examining teachers' vocal symptoms in specific potentially-stressful contexts, as the psychological stress that has characterised the transition to synchronous online teaching was associated with high levels of vocal symptoms, especially among those who reported high levels of psychological stress during previous periods of teaching. The aforementioned authors concluded that these results in teachers are consistent with the thesis that psychological stress may have a negative impact on the voice, as reported among Israeli university professors who switched to online teaching synchronously during the global COVID-19 pandemic.

In the case of students, multi-long life strategies are urgently needed to build a resilient educational system that ensures the development of skills to guarantee the future employability and productivity of young people. A large proportion of students are using digital platforms for learning, and many of them will face great challenges with the development of practical skills in their respective professions, which inevitably gives rise to additional worries and stress (Kapasia et al., 2020).

According to Haider and Al-Salman (2020), distance learning during the COVID-19 pandemic requires focused attention on the well-being of university students, so it is not simply a question of responding to the state of emergency imposed by the disease. When examining well-being, the aforementioned authors focused on discerning the use of digital tools, students' sleeping habits before and during the pandemic, social interaction, psychological state, as well as academic performance. Other researchers also took this path. In a sample of university students who continued with e-learning, an increase in anxiety and depression was observed, together with impacts on the quality of sleep, among other factors, including those associated with mental health (Kaparounaki et al., 2020).

Savitsky et al. (2020) reported that nursing students very frequently expressed anxiety. Higher self-esteem and use of humour were associated with significantly lower levels of anxiety, while mental disconnection was associated with higher levels of anxiety. Here, the authors propose that high-quality distance learning and student support during online learning are the coping strategies to follow.

Wang et al. (2020) claim that students who reported cases in family and relatives had a higher risk of depression symptoms. Coupled with this panorama, student mobility has led to unfounded prejudices during the pandemic. Particularly noteworthy is the rejection of Asian medical university students enrolled at universities in Poland. Having to deal with this problem can aggravate the sense of isolation felt by these students who study abroad (Rzymski & Nowicki, 2020). Both the experiences of infected

family members and the rejection of student communities can affect their professional development.

The neurocognitive foundations of social isolation and its profound consequences for mental and physical health have been evidenced in several emerging disciplines. This line of research has conclusively confirmed that loneliness may be the most powerful threat to human survival and longevity (Bzdok & Dunbar, 2020). Students face severe anxiety associated with economic uncertainty, fear for the health of their families, fear of infection, and the need to face the challenges of distance education.

This thesis is reinforced by the research of Trung et al. (2020), Khan et al. (2020), and Odriozola-González et al. (2020). These researchers affirm that the mental health of university students during the COVID-19 pandemic was significantly affected, showing high levels of stress, anxiety, depression and anguish, which were much more accentuated in Social Sciences students than in Engineering students. Therefore, students must be accompanied taking into account their individual demographic data, including family socio-economic status and learning habits.

Other aspects to consider when accompanying students are occupational aspirations, hours of dedication to self-study and self-study during periods in which universities are closed. In terms of ways to help students, in this complicated stage of global contagion, it is important for teachers to remain in continuous contact with students beyond the online teaching context (Savitsky et al., 2020).

To the extent that young people distance themselves socially and carry out their online learning as part of the support necessary to deal with the pandemic, better guidance must be provided to reinforce self-care among students, as well as to identify individual differences in their mental health (Oosterhoff et al., 2020). According to these authors, the psychological impact of COVID-19 on the university community during the first weeks of confinement was significant. Symptoms of depression, anxiety and stress were detected. This indicates that mental health problems may be aggravated, even more so if it is known that globally and before the pandemic began, one in five university students experienced one or more mental disorders (Zhai & Du, 2020).

The mandatory closure of universities in Bangladesh resulted in an increase in psychological distress among university students during the COVID-19 pandemic due to the use of e-learning and the fear of wasting an academic year (Hasan & Bao, 2020). Another example of tensions endured by students as a result of their migration from in-person to online learning are the technological challenges that inevitably produce anxiety. It has been reported that most students used Android mobile devices, and therefore faced problems such as poor Internet connectivity, limited data plans and an unfavourable study environment in which it is difficult to concentrate due to distractions, and mental stress aggravated the problem (Kaparounaki et al., 2020; Ahmad et al., 2020).

While this transition can lead to acute stress in some students due to lack of time for adjustment, for others remote learning allowed them to continue their professional training, thus benefiting their mental health and psychological resilience in the long term (Zhai & Du, 2020). It is important that university counselling centres provide options to continue providing students with distance counselling services, i.e. remote mental health counselling within the limitations of the pandemic outbreak.

Telemental health has been found to be effective for treating anxiety and depressive symptoms, while facilitating the provision of health promotion and counselling ser-

vices to address the pressing mental health concerns of students (Zhai & Du, 2020). This alternative was also proposed by Saefi et al. (2020) due to the need to draw the attention of university leaders and policy makers to the importance of self-care during the COVID-19 pandemic, while recommending educational interventions to help strengthen student awareness.

However, in Mizoram University, to overcome the stress caused by the cancellation of in-person classes and the switch to online teaching, educational services focused on two objectives: achieving socio-emotional equilibrium and personal adaptation during confinement; and, in particular, overcoming the panic of online education (Mishra et al., 2020)

Conclusions and discussion

Returning to the objective of analysing the different ways in which digital technologies affect young people's health, the literature review confirmed that opinions are divided regarding the use of technologies in young people and its effects on their health. Some authors present arguments to support its benefits. Others, the majority in fact, highlight the negative effects on physical and mental health, with the subsequent impacts on learning.

From a positive standpoint, the prevailing criterion is that relationships forged through social networks can promote social and personal skills in young people. These include self-affirmation, the development of knowledge, skills and community change to promote health through exchanges and social support from their respective social networks. Social networks can also allow those with lower incomes to better cope with the stress and sadness associated with poverty. Other authors defend the use of social networks by young people to foster their inclusion in digital literacy programmes as a factor for changing certain social problems and thus offer better life alternatives (Rock et al., 2016). These benefits may certainly be closely related in students with access to technology, an adequate Internet connection and who have learned to be resilient bearing in mind how vulnerable young people can be in social networks.

In this search, most authors tend to associate the use of social networks with certain negative impacts on the health of young people, all with serious implications in the short, medium and long term. The following negative associations have been reported: hours of use-quality of sleep-low sociability of young people; use of social networks-stress-nomophobia; digital natives-addicted to technology; escapism from reality- ideals of beauty-alterations in usual eating schedules-threat to privacy; the formation of social networks-exclusion of those with low socio-economic status-low self-esteem-satisfaction with life and loneliness in young people (Wolfers et al., 2020; Spivey et al., 2020).

The review of the literature published during the health crisis highlights a situation of worsening mental health conditions, not only in young university students, but also among teachers due to the stress produced by a radical change in the historically role attributed to teachers, and social isolation, now with inseparable companion, technology, which is undoubtedly transmitted to students through the so-called "mirror effect". The sudden adaptation processes caused by mandatory confinement have had significant impacts resulting in an increase in symptoms and signs of the worsening of physical and psychological health. Indeed, some studies have reported an increase in anxiety and depression, a decrease in the quality of sleep, an increase in suicide at-

tempts, among other factors, as well as those associated with mental health and negative consequences for learning, since although many simulators have replaced contact with reality, the development of practical skills in the field is irreplaceable (Trung et al., 2020; Khan et al., 2020; Odriozola-González et al., 2020; Oosterhoff et al., 2020).

Another aspect of the problem is access to and use of the Internet. Before COVID-19 it was not a priority and many people were able to function normally or with the help of others. However, today the interpersonal ties so essential to maintain our core social structures have been broken and virtual digital spaces have become the main form of communication from homes, inevitably resulting in problems of access, loss of concentration or attention. These imposed conditions increase stress and dependence on technology and deepen digital inequalities (Kaparounaki et al., 2020; Ahmad et al., 2020; Beaunoyer et al., 2020).

The tensions and problems described in the studies carried out in different regions indicate point to a global problem that requires adequate preparation of teachers to promote health in the university environment, with greater emphasis on young people (Ribero et al., 2017). The synergy between teachers, educational technology specialists and health professionals is an indispensable resource for self-care, given the many factors that can lead to burnout and the development of diseases. For now, it is useful to train teachers in health promotion and in the implementation of educational strategies aimed at improving e-learning for students with different mental health needs and fostering ties with university wellness departments.

Health professionals in these departments have better possibilities of training teachers to undertake coordinated actions for health promotion and self-care through a comprehensive and interdisciplinary approach to develop the e-learning and distance learning teaching process based on the development of social skills, as proposed by Gurgel (2016). These departments can also offer consulting services to teachers to support inclusive education, as proposed by Calheiros and Mendes (2016).

Our bibliographic review confirmed the accelerated social transition, which has resulted in dramatic changes in social relationships with information and communication technologies. The review of the technological-digital relationships with mental health allowed us to verify the connections between the key concepts studied. It also revealed the increasingly virtual nature of academic process, in which young members of the university community, i.e. new students and teachers, have more opportunities to adapt due to their status as digital natives. At the same time, the manifestation of different problems related to mental health highlights the opportunity for further research in this field.

Meanwhile, scientific evidence, while drawing attention to phenomena such as depression, stress, family, the influence of social networks or sleep disorders, to name but a few, is insufficient to determine the direction of future social processes. In particular, these synergies between teaching and technology must be studied from the sociological, psychological, pedagogical, technological and health promotion perspective as a whole. These tensions during the pandemic have been explicitly visible, but in the current scenario marked by evident changes caused by the COVID-19 outbreak, they increase the costs of adaptation that, in biological, psychological and social terms, society in general and universities in particular have had to assume.

Limitations of the study

The delimitation of the sample and the analysis of the studies to determine the theoretical connections were based strictly on consensus among the researchers with training in the fields of pedagogy, psychology and promotion in school health, which may have inadvertently resulted in failure to consider important health or sociological aspects useful for decision-making.

The selection of a single database may have excluded other research that could potentially provide specific insights in this field and which, according to the researchers, would complement the analysis of the problem studied.

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