

Online holistic program to foster health amongst students: a pilot study in a Portuguese University during COVID-19 pandemic

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Abstract

During the COVID-19 pandemic, several preventive mental health interventions took place to increase the psychological well-being of university students due to the high levels of stress, anxiety and negative emotions experienced in that period. This context reinforced the role of universities in supporting students and preventing the mental health risk factors they faced.

In this context a multidisciplinary team of professionals (psychologists, nurses, nutritionists, and artists) in the Portuguese Catholic University, gathered efforts and developed an holistic intervention program for university students based on a mind and body integrated approach. This program of 8 online sessions aims to improve students' resilience to the psychosocial consequences of COVID-19 pandemic and promote their wellbeing.

The twenty university students that participated in this pilot study reported that this intervention improved their emotional self-awareness, their ability to apply self-care strategies, as well as they believed it promoted healthier lifestyle changes. These findings suggest that this program consists in an innovative approach with the potential to promote the psychological health and well-being of university students in adverse circumstances.

Keywords: wellbeing, university students, pandemic impact, multidisciplinary intervention, positive psychology, artistic and creative activities,

1. Introduction

In 2019, the global outbreak of the coronavirus pandemic (COVID-19) was simultaneously a public health emergency and a public health burden (Collins et al., 2021; Gostin & Wiley, 2020; Greene et al., 2020). The mandatory confinement, the online teaching obligation and the prohibition of social gatherings are some of the measures that were commonly used (Aharon et al., 2021; Brauner et al., 2021; Gostin & Wiley, 2020). These measures contributed to the socio-economic burden of the pandemic, as businesses collapsed, prices and unemployment increased (Atalan, 2020; Aristodemou et al., 2021; Ashraf, 2020; Odone et al., 2020) and had a negative impact on the mental health of the general population around the world (Paulino, et al., 2021; Khan et al., 2020; Talevi et al., 2020; Xiong et al., 2020). Psychological risk factors such as social isolation, loneliness, anxiety, stress, depression, grieving the death of significant others and fear of COVID-19 infection were prevalent during the pandemic (Alkhamees et al., 2020; Ahmed et al., 2020; Gunnell et al.,

2020). Dubé and colleagues' meta-analysis' (2021) points out increased event rates for suicide ideation, suicide attempts, and self-harm. Several studies identified health professionals and university students as vulnerable groups with a greater risk of developing mental health issues (Baloran, 2020; Browning et al., 2021; Cao et al. 2020; Odriozola-González et al. 2020).

According to several studies conducted across the world, university students exhibited increased levels of stress, anxiety, and depression during the pandemic (Aristovnick et al, 2020; Baloran, 2020; Browning et al., 2021; Patias et al., 2021; Wang et al., 2020). This impact on students' mental health is associated to drastic changes, such as adapting to online learning, facing new living circumstances, restrictions to hands-on experiences (e.g., labs, art studios, etc.), difficulties in internet access at home and financial struggles - as a consequence of the negative economic impact of the pandemic worldwide (Kecojevic, et al., 2020; Sahu, 2020). The same impact was found amongst Portuguese university students: being a woman, younger, out-of-home, or having scholarship was associated with increased susceptibility to mental health variation before and during the pandemic (e.g. Sequeira et al., 2022). Patrão and colleagues (2020) also found that the psychological impact of the pandemic was worse when compared with other population groups. The university student's psychological vulnerability was found to be strongly associated with worse positive mental health with a slight increase during COVID-19. These findings might be justified by the uncertainty and potential negative impact of the pandemic in academic progression (Patrão et al., 2020). In previous studies, with Portuguese university students, Machado and colleagues (2023a) conclude that over half exhibited increased stress, depression, and generalized anxiety symptoms (cf. Machado et al., 2023a). These researchers also found that depression, anxiety, stress, and disordered eating were related to increased weight and that weight changes during the pandemic were associated to the use of some coping strategies, such as behavioral disengagement (cf. Machado et al., 2023b).

Due to the vulnerability of health professionals and university students to experience increased levels of stress, anxiety and depression during the pandemic, several preventive mental health interventions were developed (e.g. Gonzalez et al., 2020; Krifa, et al., 2021) to promote their psychological well-being.

Several mental health interventions were inspired by the framework of third wave cognitive behaviour therapy (CBT) and positive psychology, characterized by more flexible and effective process raised in contextual and experiential change strategies (e.g. Hayes, 2004, 2017;) and the individual capability to experience and maximize positive emotions (e.g. Seligman et al., 2005; Carr et al., 2021). Strategies, such as mindfulness exercises (e.g., mindfulness of senses meditation), emphasized the role of cognition and emotions by encouraging the acceptance of unwanted thoughts and feelings and/or cognitive diffusion (the ability to see thoughts as just thoughts) are used to elicit change in the thinking processes (Hunot et al., 2013; Schotanus-Dijkstra et al., 2015). This approach considers the mind-body monism premise - in accordance with complementary and integrative medicine framework - which conceptualizes the mind and the body as a single, holistic system (Leitan & Murray, 2014) and human functioning is an interaction between mental and physical processes that are interdependent and that co-occurring.

The crosstalk between stress and nutrition, for example, is well recognized and chronic stress seems to play a detrimental role in influencing dietary behaviours, determining a higher consumption of soda and fatty foods (Sungwoo et al., 2020). Additionally, stress eating affects emotional eating, which refers to how we eat in response to negative emotions often brought on by stress (Klatzkin et al., 2022). Therefore, wellbeing and mental health depends on the

dynamic interaction between cognitive, behavioural, emotional, biological, and environmental factors (Thomas, 2013). Science shows that the ability to understand the relationship between cognition, emotions and behaviours contributes to increase the capacity for emotional self-regulation, contributing to cognitive reassessment (e.g., Mestre et al., 2016, Davies et al., 2014).

Emotional-regulation strategies are key mechanisms also promoted by art-focused experiences (creative writing, drawing, vocal techniques) that contribute to increase creativity and decrease anxiety in students (e.g., Sandmire et al., 2012; Walsh et al., 2005; Fancourt et al., 2020), and enhance a greater cognitive flexibility, which facilitates the questioning of totalitarian assumptions and the construction of a more holistic reality (Batista et al., 2018). Artistic and creative activities can be easily reproduced daily – therefore considered “little c” creativity (Kaufman & Beghetto, 2009; Fancourt et al., 2019) - and show evidence of positively impacting psychological well-being and mental health (Van Lith et al., 2013). In this context two dimensions - self-discovery and self-expression - are considered the ones that more significantly contribute for mental benefits (Van Lith et al., 2013). Self-discovery is being associated with consciously work on perspectives of own abilities, such as: “capacity for introspection, expansion of possibilities, and capacity to work with insights into emotions and feelings”; and self-expression is related to enabling “the release of tensions and unresolved feelings” (Van Lith et al., 2013).

A great amount of research points out the interdependence between physical and psychological process, regarding human well-being, and the positive impact of those interventional approaches in health (e.g. Schotanus-Dijkstra, 2015; Seifert et al., 2020; O’Leary & Dockray, 2015), thus, in pandemic context, they have supported mental health promotion interventions addressing general population (e.g., Dominguez-Rodriguez et al., 2020;) healthcare professionals (e.g., Blake et al., 2020; Hall et al., 2020; Weiner et al., 2020) and university students (e.g., Luberto et al., 2020).

These interventions can ameliorate both emotion regulation and cognitive flexibility (Panayiotou et al., 2021), which are believed to increase people’s resiliency during COVID-19 pandemic (Naeem et al., 2021). Most of these interventions (e.g., Hall et al., 2020) also mobilize knowledge and integrate strategies from different disciplinary areas (e.g., psychology, nutrition, health care, and arts). Moreover, there is evidence that suggests that during the pandemic, positive psychology based mental health promotion interventions were able to promote emotional regulation, optimism, hope and university students’ engagement in their studies (Krifa et al., 2021; Luberto et al., 2020).

Considering the restrictions to social contact and stay-at-home orders imposed by the governments around the world during COVID 19 pandemic, many of these health promotion interventions were conducted online (e.g., Hall et al., 2020; Luberto et al., 2020; Dominguez-Rodriguez et al., 2020; Rauschenberg et al., 2021; Weiner et al., 2020). There is compelling evidence that online interventions are effective and can reduce depression and anxiety symptoms, while increasing participants’ well-being (Antoine et al., 2018; Görges et al., 2020; Wellenzohn et al., 2016). There is also evidence that online interventions are particularly effective to reduce the psychosocial consequences of COVID-19 pandemic, namely social isolation, loneliness, symptoms of stress, anxiety, and depression (Rauschenberg et al., 2020).

2. ACT 19 – An Online Program for university students

Introduction

This paper intends to describe an online intervention programme designed for university students at the Universidade Católica Portuguesa (UCP), as a way to provide some tools to help to overcome the challenges that students were facing during the pandemic period, considering its contingencies that interfere with students physical and psychological well-being and their academic performance. Therefore, the program aims to promote health and buffer risk conditions by promoting resilience through more flexible and adaptative lifestyles. The program also anchors itself in boosting students' creativity and self-awareness exploration, endorsing and encouraging changes in perspective, considered crucial to overcome difficulties and struggles.

The intervention programme developed by UCP relied on multidisciplinary collaborations intersecting knowledge and evidence-based interventions of different disciplinary areas (psychology, nursing, nutrition, and arts). This process has been a distinguishing factor and guarantees a holistic and comprehensive approach, that aggregate resources, strategies, and professional skills, that culminate in pertinent and complementary contents, complexifying and improving the interventional response (Gonzalez et al., 2020).

A key-feature of this intervention was that it was conducted online, in a synchronous group, allowing the students from all faculty's campus and regional areas of the UCP to access the intervention in safety.

The project was approved by the Health Ethical Commission of UCP (n°.132UCP).

Program Description

This intervention program is based on the mind-body paradigm (Hall et al., 2020), embedded in the theoretical approaches of third wave CBT and positive psychology. This approach emphasizes the interconnection of cognitive-behavioural components (e.g., ability to identify thoughts, emotions, and associated behaviours and individual resources), physiological responses to stress (e.g., promotion of bodily relaxation responses), social support network and health promotion behaviours (e.g., sleep hygiene, healthy eating, physical exercise, creative practices), and it brings more awareness to what we are doing, as well as raising awareness about the link between thoughts, emotions, and behaviours, such as eating. Additionally, it considers the importance of resilience skills, which makes it possible to manage and adapt to emotionally demanding situations, as well as to assign meaning to them (Herrman et al., 2011). Resilience was promoted using some underpinning principles of positive psychology, such as the promotion of gratitude, self-compassion, and creativity.

According to this rationale this intervention was structured in 3 modules: (1) Recognising signs of Stress, (2) Coping with stress, resiliency, and adaptation promotion, and (3) Accepting uncertainty as a natural part of life (see table 1).

The first module - *Recognising signs of Stress*-, intends to increase the ability to observe, recognise and understand the wide emotional spectrum and its functionality, as well as the relationship that emotions have with eating habits. In this sense, strategies focused on cognition and eating are explored as promoters of well-being and self-knowledge. The ability to understand the relationship between cognition, emotions and behaviours contributes to the increase of emotional self-regulation, providing a better understanding of the emergence of a particular emotion and its intensity (e.g., Mestre et al., 2016). The same rationale is mirrored in

the process of eating, inviting participants to be more observant to the *how*, and *when* food intake occurred, also sought to transfer the knowledge underlying the assumptions of the cognitive-behavioural approach to food decision-making, with the respective emotional impact. The activities proposed to participants intends to bring awareness to the attitude underlining the eating process as well as impact eating habits, as it increases consciousness and thoughtfulness, empowering the student to take an active role in promoting their well-being. In the creativity domain the proposal for self-discovery path is developed from the outside to the inside of the individual, inviting the students to observe the outside world through online digital photography, benefiting from the participants' proficiency in social networks.

The second module - *Coping with stress, resiliency, and adaptation promotion* - intend to address attention focusing on emotional experience and daily routines in order to promote resilience through a sense of control and connection with self and social network. Experiential strategies such as mindfulness in nutrition, mindfulness and relaxation were crucial to stress management. Mindfulness is, in fact, the capacity to practice full attention and transfer thinking to the present experience. The result of this ability makes possible to focus attention to different parts of the body, identify muscular tension and, consequently, produce a relaxation response (Marlatt & Kristeller, 1999). In this sense, Jacobson's progressive muscle relaxation respect the principles of mindfulness and was, therefore, included in intervention. This strategy shows a positive impact on reducing anxiety and increasing sleep quality when practiced daily (e.g., Liu, K. et al., 2020; Toussaint et al., 2021). According to Lentz and Brown (2018), the subjective quality and duration of sleep is a moderating factor between mindfulness and health behaviours, specifically at eating level, in other hand, relaxation strategies also facilitate sleep quality in students (e.g. Lentz & Brown, 2018; Liu, X. et al., 2020). Relaxation, and mindfulness in nutrition, becomes fundamental as it increases awareness of eating patterns, associated with more positive health behaviours (Bryan, 2016). Mindful eating supports practitioners' sense of who they are by reassuring them that they are in a nonjudgmental and self-accepting way (Nelson 2017). It encourages individuals to appreciate food rather than restricting it, and to live fully in each moment and appreciate their life as it is (Nelson, 2017). In the creative domain the second module proposes creative writing based on dreams (Mancelos, 2019).

The strategies described may contribute to increased resilience that has a positive influence on students' perceived self-efficacy, which is critical for self-regulatory learning processes (Cassidy, 2015). The development of a personal model of resilience, allying the principles of positive psychology is an objective that transversally facilitates the management of challenges along the life cycle.

The theoretical constructs addressed by this module such as reflexivity and empathy facilitate the transition to the next module, which focuses on gratitude, compassion, and self-presentation (Grant & Kinman, 2012).

The third module, *Accepting uncertainty as a natural part of life*, is focused on gratitude, compassion, to reflect on the inner self. On the one hand, gratitude, as an emotion and attitude towards life, enables us to increase resilience and is positively correlated with the reduction of negative emotional states, which generate greater vulnerability (Jans-Beken et al., 2020). On the other hand, self-compassion is an affective state and an integral part of the social mindset and motivation, implies greater awareness of emotional states, greater empathy, and behavioural intentionality (Gilbert, 2019).

The development of this skill is associated with relaxation practices - including voice expression with meditation purposes (Newham, 2005; Schelde, 2018) - compassionate tones of voice and facial expressions. Compassion is associated with less self-criticism, promoting more positive emotional states (Gilbert & Choden, 2013). The self-portrait, a proposal in the creativity domain, was a means of promoting greater reflection and awareness about the self, based on the identification of strengths and weaknesses contextualized by life history and socio-cultural environment.

The programme consists of 8 sessions of 1 hour each, which took place over the period of four weeks. The short duration sessions were considered fundamental to have students engaged and fully attentive, and also prone to adapt to the busy schedule that university life demands. This constitutes an attendance control strategy that is particularly pertinent considering the overlapping of modules ‘aims and experiential strategies.

Table 1 describes the structure and contents of each session and how they are interconnected. The sessions were spaced apart so that students had time to reflect and implement the strategies in their daily routine (which are identified in Table 1). This aspect is also supported by homework assignments, to expand the learning constructed throughout the intervention. Although session aims converge, each topic within the session is led by a professional from a specific area (e.g., psychology, nursing, arts, or nutrition). The conceptualization of ACT19 involves a team of 17 professionals, 9 participate actively in the sessions.

Table 1 – ACT19 - Program Description

Weeks	Modules	Components	Disciplinary Area
1st	Recognising signs of Stress	1) Learn about the importance of emotions. 2) Recognise emotional spectrum and impact on individual functioning. 3) Understanding and monitoring the interaction between thoughts-emotions-behaviours.	Psychology
		Relation between brain function in stressful situation and food choices.	Nutrition
2nd	Coping with stress, resiliency, and adaptation promotion	Mindfulness in nutrition 1)Bringing awareness to the meal moment. 2)Observing the cascade of thoughts, emotions, and food choices. 3)identifying the crucial moment that determines food intake.	Nutrition
		Observing and recording: tasting colors. When we record our observations (photography, video, sound), we create our expression in the world.	Arts
		Learn about the importance of self-care on health. Mindfulness and relaxation practices. Sleep as a basic human need and health. Sleep/wake balance and circadian rhythm.	Nursing
3rd		Dreams! Dreaming and writing. The dream as an unlocking and inspiration strategy. Myths, Symbols and the Operative Power of the Word.	Arts

		Identifying automatic thoughts, emotions, and behaviours. Generating alternative thoughts. Resilience: building a personal resilience model. Give voice to the movement? The voice and the expressive movement) Emotions and vocal Expression: the voice as mental, emotional, physical and spiritual channel Vocal frequencies and the healing potential.	Psychology Arts
4th	Accepting uncertainty as a natural part of life	Stress is not inevitable. 1) Gratitude: identifying strategies to promote gratitude. 2) Self-compassion.	Psychology
		Self-portrait 1) A Self Portrait is not a Selfie. 2) Practical exercise (Self-Portrait).	Arts

All the sessions combine psychoeducation with adaptive coping strategies, focused on different subject areas. Knowledge is developed by the participants' own experiences, to further increase the likelihood of success of the integration of the strategies on a daily basis. The program advocates the importance of individual experience, as this enables the incorporation of resilience, gratitude, self-compassion, mindfulness, creative writing, vocal techniques, health behaviours and other self-care strategies into individual routine.

The programs aim the students from the UCP, from all faculties (e.g., law, business, psychology, nursing, nutrition, arts), from any degree (Bachelor, Master, Doctorate) or university campi in Portugal (Porto, Viseu, Braga and Lisboa) of the Catholic University.

A website was created, to disclosure ACT19 information to presenting the programme, its objectives, modules, and indications of how to enrol, as well as support contacts. In addition, the team members who are lecturers at the university, informed their students about the intervention. Finally, this programme was also disseminated in the academic community through participation in a research forum.

3. Piloting ACT 19

A pilot-test of the ACT19 program was conducted in which a group of 20 students from several faculties were invited to participate. Aiming to evaluate the feasibility and the acceptability of the program and collect the suggestions that the participants may have regarding his refinement, we asked them to respond anonymously through an online survey to the following questions: What kind of comment would you like to share with the ACT19 team? What improvements to the program would you suggest?

The content of participants' responses was analysed through an open codification process (Saldaña, 2009). The aggregation of these codes allows the identification of five themes: 1) general comments to program relevance; 2) usefulness of the program; 3) characteristics of program setting; 4) ameliorations to the program; 5) willingness to recommend the program. For each theme or category, we provide illustrative quotations as examples. The table 2 presents in detail themes 1 and 2 regarding their importance to describe program impact and the high frequency of references in those aspects.

Table 2- Content Analysis of participants' comments to the first edition of Act 19 - Program

Theme		Quotes
1. General comments to the relevance of the program (6 references)		<p><i>(...) a sounded, complete, and diverse program (P2)</i></p> <p><i>Very pertinent and interesting program (P3)</i></p> <p><i>Incredible program (P12)</i></p> <p><i>Fantastic! Very important program (P15)</i></p> <p><i>Very well put together, structured program, fluent and multidisciplinary (P16)</i></p> <p><i>Really important program (P18)</i></p>
Theme	Categories	Quotes
2. Usefulness of the Program (22 references)	2.1 Raising awareness	<p><i>Highlight the importance of a deeper work on self-awareness (P3)</i></p> <p><i>Empowerment in personal and professional life (P1)</i></p> <p><i>(the program is) very close to current struggles and real life; (promote) and inner reflection (P7)</i></p> <p><i>The program gave us perspective and understanding on how covid pandemic impacted our lives (P11)</i></p> <p><i>The program showed how an inquisitor mind improves self-awareness (P14)</i></p> <p><i>I was not aware of stress consequences over time, in terms of mental and physical health (P19)</i></p>
	2.2 Practical tools	<p><i>(Highlight) important tools to ones opening up (P3)</i></p> <p><i>(...) with stress management easy-to-learn tools (P4)</i></p> <p><i>Easy tools to identify stress in oneself and in others, fostering understanding and empathy (P5)</i></p> <p><i>(...) taught how to change lifestyles and stress levels (P6)</i></p> <p><i>(...) promote life changes, stress management (P7)</i></p> <p><i>(the program) gave us simple tools to identify and manage stress (P11)</i></p> <p><i>A very rich program in terms of theory and practical tools to manage stress (P13)</i></p> <p><i>(the program) conveys simple tools to deal with stress (P14)</i></p>

		<p><i>(a program) that gives us tools to deal with stress and emotions management (P16)</i></p> <p><i>The program gave me the knowledge and the tools to act on it (physical and mental health)! (P19)</i></p>
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Regarding the **characteristics of the setting** (theme 3), participants mentioned that the program promotes a comfortable setting to share experiences: *“The intimate environment stimulated openness and sharing experiences which was vital to foster reflections” (P13)*; and to promote closeness: *“It made us feel that we are not alone” (P17)*. Participants made some **proposals to ameliorate the program** (theme 4), that encompasses regularity, more deep and practical sessions with presential work. Although they **will recommend the program to their peers** (theme 5), participants commented about the tabu regarding mental health issues: *“Mental health is still a tabu and requires a broader, more opened-up discussion” (P4)*; reinforcing the importance to pay attention to the risk to mental health and how to prevent mental health problems : *“ It is very important to reinforce the need to talk about mental health, so that it is taken care of it and preserved “(P9).*

4. Conclusion and Future Recommendations

University students are a vulnerable population under increasing pressure to succeed in an uncertain future. In this context universities must be prone to support and prevent the student’s health risks addressing their needs.

During pandemic synchronous remote intervention programs facilitate peer support and connection, mitigating the impact on students ‘mental health associated to drastic changes in learning process, and new living circumstances, reducing feelings of isolation.

The testimony of the participants in this pilot study points out the usefulness of the program, promoting a better awareness of emotional and cognitive process and providing tools to deal with the challenges of the daily life. Besides the stigma associated to mental health issues, participants will recommend the program to peers in university context.

This online multidisciplinary intervention was an innovative proposal in Portuguese university context and allowed a broad dissemination and access to stress management and resilience interventions offered to Catholic University students’ during almost a year where six editions of Act 19- Program were yield and more than 80 university students enrolled.

The dissemination of this approach improving awareness and making available self-care strategies in students’ environment can make a difference in promoting their wellbeing and psychological health, toward healthier lifestyles.

References

- Aristodemou, K., Buchhass, L., & Claringbould, D. (2021). The COVID-19 crisis in the EU: the resilience of healthcare systems, government responses and their socio-economic effects. *Eurasian Economic Review*, *11*(2), 251-281. <https://doi.org/10.1007/s40822-020-00162-1>
- Ashraf, B. N. (2020). Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets. *Journal of behavioral and experimental finance*, *27*, 100371. <https://doi.org/10.1016/j.jbef.2020.100371>
- Atalan, A. (2020). Is the lockdown important to prevent the COVID-19 pandemic? Effects on psychology, environment and economy-perspective. *Annals of medicine and surgery*, *56*, 38-42. <https://doi.org/10.1016/j.amsu.2020.06.010>
- Aharon, D. Y., Baig, A. S., & DeLisle, R. J. (2021). The impact of government interventions on cross-listed securities: Evidence from the COVID-19 pandemic. *Finance Research Letters*, 102276. <https://doi.org/10.1016/j.frl.2021.102276>
- Ahmed, M. Z., Ahmed, O., Aibao, Z., Hanbin, S., Siyu, L., & Ahmad, A. (2020). Epidemic of COVID-19 in China and associated psychological problems. *Asian journal of psychiatry*, *51*, 102092. doi: 10.1016/j.ajp.2020.102092
- Alkamees, A. A., Alrashed, S. A., Alzunaydi, A. A., Almohimeed, A. S., & Aljohani, M. S. (2020). The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia. *Comprehensive psychiatry*, *102*, 152192. doi: 10.1016/j.comppsy.2020.152192
- Antoine, P., Dauvier, B., Andreotti, E., & Congard, A. (2018). Individual differences in the effects of a positive psychology intervention: Applied psychology. *Personality and Individual Differences*, *122*, 140-147. doi:10.1016/J.PAID.2017.10.024
- Aristovnik, A.; Damijana, K.; Dejan, R., Tomasevic, N. & Ume, L. (2020). Impacts of the COVID-19 Pandemic on Life of Higher Education Students: A Global Perspective. *Sustainability*, *12*, 8438. doi:10.3390/su12208438
- Baloran, E. T. (2020). Knowledge, attitudes, anxiety, and coping strategies of students during COVID-19 pandemic. *Journal of loss and trauma*, *25*(8), 635-642. <https://doi.org/10.1080/15325024.2020.1769300>
- Baptista, J., Magalhães, C., Pinheiro, P., Ribeiro, A., Catarina, R., Silva, J. R. D., & Gonçalves, M. M. (2018). *Terapia narrativa de reautoria*. Psiquilíbrios edições.
- Blake, H., Bermingham, F., Johnson, G., & Tabner, A. (2020). Mitigating the psychological impact of COVID-19 on healthcare workers: a digital learning package. *International journal of environmental research and public health*, *17*(9), 2997. doi: 10.3390/ijerph17092997
- Brauner, J. M., Mindermann, S., Sharma, M., Johnston, D., Salvatier, J., Gavenčiak, T., ... & Kulveit, J. (2021). Inferring the effectiveness of government interventions against COVID-19. *Science*, *371*(6531), eabd9338. doi: 10.1126/science.abd9338
- Bryan, S. (2016). Mindfulness and nutrition in college age students. *Journal of Basic and Applied Sciences*, *12*, 68-74. doi:10.6000/1927-5129.2016.12.11
- Browning, M. H., Larson, L. R., Sharaievska, I., Rigolon, A., McAnirlin, O., Mullenbach, L., ... & Alvarez, H. O. (2021). Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PloS one*, *16*(1), e0245327. <https://doi.org/10.1371/journal.pone.0245327>
- Carr, A.; Cullen, K.; Keeney, C.; Canning, C.; Mooney, O.; Chinseallaigh, E. & O'Dowd, A., (2021) Effectiveness of positive psychology interventions: a systematic review and meta-analysis, *The Journal of Positive Psychology*, *16*:6, 749-769. <https://doi.org/10.1080/17439760.2020.1818807>
- Cassidy, S. (2015). Resilience building in students: The role of academic self-efficacy. *Frontiers in psychology*, *6*, 1781. <https://doi.org/10.3389/fpsyg.2015.01781>

- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>
- Collins, T., Tello, J., Van Hilten, M., Mahy, L., Banatvala, N., Fones, G., ... & Willumsen, J. (2021). Addressing the double burden of the COVID-19 and noncommunicable disease pandemics: a new global governance challenge. *International Journal of Health Governance*. Vol. 26 No. 2, pp. 199-212. <https://doi.org/10.1108/IJHG-09-2020-0100>
- Davies, E.; Morriss, R.; Glazebrook, C. (2014). Computer-Delivered and Web-Based Interventions to Improve Depression, Anxiety, and Psychological Well-Being of University Students: A Systematic Review and Meta-Analysis *J Med Internet Res* ;16(5): e130. doi: 10.2196/jmir.3142
- Dominguez-Rodriguez, A., De La Rosa-Gómez, A., Jiménez, M. J. H., Arenas-Landgrave, P., Martínez-Luna, S. C., Silva, J. A., ... & Guzmán, V. A. (2020). A Self-Administered Multicomponent Web-Based Mental Health Intervention for the Mexican Population During the COVID-19 Pandemic: Protocol for a Randomized Controlled Trial. *JMIR research protocols*, 9(11), e23117. doi: 10.2196/23117
- Dubé, J. P., Smith, M. M., Sherry, S. B., Hewitt, P. L., & Stewart, S. H. (2021). Suicide behaviors during the COVID-19 pandemic: a meta-analysis of 54 studies. *Psychiatry research*, 301, 113998. <https://doi.org/10.1016/j.psychres.2021.113998>
- Fancourt D, Garnett C, Spiro N, West R, Mullensiefen D (2019) How do artistic creative activities regulate our emotions? Validation of the Emotion Regulation Strategies for Artistic Creative Activities Scale (ERS-ACA). *PLoS ONE* 14(2): e0211362. <https://doi.org/10.1371/journal.pone.0211362>
- Fancourt, D., Garnett, C., & Müllensiefen, D. (2020). The Relationship Between Demographics, Behavioral and Experiential Engagement Factors, and the Use of Artistic Creative Activities to Regulate Emotions. *Psychology of Aesthetics, Creativity, and the Arts*. Advance online publication. <http://dx.doi.org/10.1037/aca0000296>
- Géraldine M. Camilleri and others, (2014). The Associations between Emotional Eating and Consumption of Energy-Dense Snack Foods Are Modified by Sex and Depressive Symptomatology. *The Journal of Nutrition*, Volume 144, Issue 8, August 2014, 1264–1273, <https://doi.org/10.3945/jn.114.193177>
- Gostin, L. O., & Wiley, L. F. (2020). Governmental public health powers during the COVID-19 pandemic: stay-at-home orders, business closures, and travel restrictions. *Jama*, 323(21), 2137-2138. doi: 10.1001/jama.2020.5460
- Görges, F., Oehler, C., Hirschhausen, E., Hegerl, U., & Rummel-Kluge, C. (2020). GET.HAPPY2— User perspectives on an internet-based self-management positive psychology intervention among persons with and without depression: Results from a retrospective survey. *Journal of Clinical Psychology*, 76(6), 1030–1046. <https://doi.org/10.1002/jclp.22886>
- Gonzalez, A., Cervoni, C., Lochner, M., Marangio, J., Stanley, C., & Marriott, S. (2020). Supporting health care workers during the COVID-19 pandemic: Mental health support initiatives and lessons learned from an academic medical center. *Psychological Trauma: Theory, research, practice, and policy*, 12(S1), S168. <https://doi.org/10.1037/tra0000893>
- Greene, C. J., Burleson, S. L., Crosby, J. C., Heimann, M. A., & Pigott, D. C. (2020). Coronavirus disease 2019: International public health considerations. *Journal of the American College of Emergency Physicians Open*, 1(2), 70-77. <https://doi.org/10.1002/emp2.12040>
- Gunnell, D., Appleby, L., Arensman, E., Hawton, K., John, A., Kapur, N., ... & Yip, P. S. (2020). Suicide risk and prevention during the COVID-19 pandemic. *The Lancet Psychiatry*, 7(6), 468-471. doi: 10.1016/S2215-0366(20)30171-1

- Grant, L., & Kinman, G. (2012). Enhancing wellbeing in social work students: Building resilience in the next generation. *Social work education, 31*(5), 605-621. <https://doi.org/10.1080/02615479.2011.590931>
- Gilbert, P. (2019). Explorations into the nature and function of compassion. *Current opinion in psychology, 28*, 108-114. <https://doi.org/10.1016/j.copsyc.2018.12.002>
- Gilbert, P., & Choden. (2013). *Mindful compassion: using the power of mindfulness and compassion to transform our lives*. Hachette.
- Hall, D. L., Millstein, R. A., Luberto, C. M., Perez, G. K., & Park, E. R. (2020). Responding to COVID-19 Stress: Disseminating Mind-Body Resiliency Approaches. *Global Advances in Health and Medicine, 9*. <https://doi.org/10.1177/2164956120976554>
- Hayes, S. C. (2004). Acceptance and Commitment Therapy, Relational Frame Theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy, 35*, 639-665. doi: 10.1016/S0005-7894(04)80013-3.
- Hayes, S. C., & Hofmann, S. G. (2017). The third wave of cognitive behavioral therapy and the rise of process-based care. *World psychiatry, 16*(3), 245. doi: 10.1002/wps.20442
- Herrman, H., Stewart, D. E., Diaz-Granados, N., Berger, E. L., Jackson, B., & Yuen, T. (2011). What is resilience? *The Canadian Journal of Psychiatry, 56*(5), 258-265. <https://doi.org/10.1177/07067437111056005>
- Hunot, V., Moore, T. H., Caldwell, D. M., Furukawa, T. A., Davies, P., Jones, H., ... & Churchill, R. (2013). 'Third wave' cognitive and behavioural therapies versus other psychological therapies for depression. *Cochrane Database of Systematic Reviews, (10)*. <https://doi.org/10.1002/14651858>
- Jans-Beken, L., Jacobs, N., Janssens, M., Peeters, S., Reijnders, J., Lechner, L., & Lataster, J. (2020). Gratitude and health: An updated review. *The Journal of Positive Psychology, 15*(6), 743-782. <https://doi.org/10.1080/17439760.2019.1651888>
- Kaufman JC, Beghetto RA. (2009) Beyond Big and Little: The Four C Model of Creativity. *Review of General Psychology, 13*(1):1-12. doi:10.1037/a0013688
- Khan, K. S., Mamun, M. A., Griffiths, M. D., & Ullah, I. (2020). The mental health impact of the COVID-19 pandemic across different cohorts. *International journal of mental health and addiction, 1*-7. doi: 10.1007/s11469-020-00367-0
- Kecojevic, A., Basch, C. H., Sullivan, M., & Davi, N. K. (2020). The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, cross-sectional study. *PloS one, 15*(9), e0239696. <https://doi.org/10.1371/journal.pone.0239696>
- Klatzkin, R.R., Nolan, J.B., Kissileff, H.R. (2022). Self-reported emotional eaters consume more food under stress if they experience heightened stress reactivity and emotional relief from stress upon eating. *Physiology & Behavior, 243* (2022) 113638. <https://doi.org/10.1016/j.physbeh.2021.113638>
- Krifa, I., Hallez, Q., van Zyl, L. E., Braham, A., Sahli, J., BenNasr, S., & Shankland, R. (2022). Effectiveness of an online positive psychology intervention among Tunisian healthcare students on mental health and study engagement during the Covid-19 pandemic. *Applied Psychology: Health and Well-Being, 14*(4), 1228-1254. <https://doi.org/10.1111/aphw.123321254>
- Luberto CM, Goodman JH, Halvorson B, Wang A, Haramati A. (2020). Stress and Coping Among Health Professions Students During COVID-19: A Perspective on the Benefits of Mindfulness. *Global Advances in Health and Medicine ; 9*. doi:10.1177/2164956120977827
- Liu, K., Chen, Y., Wu, D., Lin, R., Wang, Z., & Pan, L. (2020). Effects of progressive muscle relaxation on anxiety and sleep quality in patients with COVID-19. *Complementary therapies in clinical practice, 39*, 101132. <https://doi.org/10.1016/j.ctcp.2020.101132>
- Liu, X., Liu, J., & Zhong, X. (2020). Psychological state of college students during COVID-19 epidemic. *Available at SSRN 3552814*.

- Leitan, N. D., & Murray, G. (2014). The mind-body relationship in psychotherapy: Grounded cognition as an explanatory framework. *Frontiers in psychology*, 5, 472. <https://doi.org/10.3389/fpsyg.2014.00472>
- Lentz, T. A., & Brown, C. (2019). Mindfulness and health behaviors in college students: The moderating role of sleep. *Journal of American College Health*, 67(6), 505-514. <https://doi.org/10.1080/07448481.2018.1497638>
- Machado, B.C.; Pinto, E.; Silva, M.; Veiga, E.; Sá, C.; Kuhz, S.; Silva, P.O.; Pimenta, A.; Gomes, A.; Almeida, A.; et al. (2023a). Impact of the COVID-19 pandemic on the mental and physical health and overall wellbeing of university students in Portugal. *PLoS ONE* 10, 312. <https://doi.org/10.1371/journal.pone.0285317>
- Machado, B. C., Moreira, C. S., Correia, M., Veiga, E. & Gonçalves, S. (2023b). Coping as a Mediator and Moderator between Psychological Distress and Disordered Eating Behaviors and Weight Changes during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 20, 2504. <https://doi.org/10.3390/ijerph20032504>
- Mancelos, J. (2015). *Introdução à Escrita Criativa*. Lisboa: Colibri.
- Marlatt, G. A., & Kristeller, J. L. (1999). Mindfulness and meditation. In W. R. Miller (Ed.), *Integrating spirituality into treatment: Resources for practitioners* (pp. 67–84). American Psychological Association. <https://doi.org/10.1037/10327-004>
- Mestre, J. M., MacCann, C., Guil, R., & Roberts, R. D. (2016). Models of cognitive ability and emotion can better inform contemporary emotional intelligence frameworks. *Emotion Review*, 8(4), 322-330. <https://doi.org/10.1177/1754073916650497>
- Naeem, F., Irfan, M., & Javed, A. (2020). Coping with COVID-19: Urgent need for building resilience through cognitive behaviour therapy. *Khyber Medical University Journal*, 12(1), 1-3. <https://doi.org/10.35845/kmuj.2020.20194>
- Nelson, J.B. (2017) Mindful Eating: The Art of Presence While You Eat. *Diabetes Spectrum*. 30(3):171-174. doi: 10.2337/ds17-0015.
- Newham, P. (2005). *Therapeutic Voicework: principles and practices for the use of singing as a therapy*. Jessica Kingsley Publishers.
- Odone, A., Lugo, A., Amerio, A., Borroni, E., Bosetti, C., Carreras, G., ... & Gallus, S. (2020). COVID-19 lockdown impact on lifestyle habits of Italian adults. *Acta Bio Medica: Atenei Parmensis*, 91(9-S), 87. doi: 10.23750/abm.v91i9-S.10122
- Odrizola-González, P., Planchuelo-Gómez, Á., Iruetia, M. J., & de Luis-García, R. (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry research*, 290, 113108. <https://doi.org/10.1016/j.psychres.2020.113108>
- O'Leary, K., & Dockray, S. (2015). The effects of two novel gratitude and mindfulness interventions on well-being. *The Journal of Alternative and Complementary Medicine*, 21(4), 243-245. <https://doi.org/10.1089/acm.2014.0119>
- Panayiotou, G., Panteli, M., & Leonidou, C. (2021). Coping with the invisible enemy: The role of emotion regulation and awareness in quality of life during the COVID-19 pandemic. *Journal of Contextual Behavioral Science*, 19, 17-27. <https://doi.org/10.1016/j.jcbs.2020.11.002>
- Patias, N. D., Von Hohendorff, J., Cozzer, A. J., Flores, P. A., & Scorsolini-Comin, F. (2021). Mental health and coping strategies in undergraduate students during COVID-19 pandemic. *Trends in Psychology*, 29(3), 414-433. <https://doi.org/10.1007/s43076-021-00069-z>
- Patrão, I., Araújo, A., Romano, A., Enes-Pinheiro, B., Figueiredo, C., Lobo, G., ... & Pimenta, F. (2020). Impacto psicossocial do vírus covid-19: Emoções, preocupações e necessidades numa amostra portuguesa. *Psicol. Saúde Doenças*, 21, 541-557. <http://dx.doi.org/10.15309/20psd210301>
- Paulino, M., Dumas-Diniz, R., Brissos, S., Brites, R., Alho, L., Simões, M. R., & Silva, C. F. (2021). COVID-19 in Portugal: exploring the immediate psychological impact on the general

- population. *Psychology, Health & Medicine*, 26(1), 44-55. <https://doi.org/10.1080/13548506.2020.1808236>
- Priede, A., López-Álvarez, I., Carracedo-Sanchidrián, D., & González-Blanch, C. (2021). Mental health interventions for healthcare workers during the first wave of COVID-19 pandemic in Spain. *Revista de Psiquiatría y Salud Mental*, Volume 14, Issue 2, April–June 2021, Pages 83-89. <https://doi.org/10.1016/j.rpsm.2021.01.005>
- Rauschenberg, C., Schick, A., Hirjak, D., Seidler, A., Paetzold, I., Apfelbacher, C., ... & Reininghaus, U. (2021). Evidence synthesis of digital interventions to mitigate the negative impact of the COVID-19 pandemic on public mental health: rapid meta-review. *Journal of medical Internet research*, 23(3), e23365. Doi: 10.2196/23365
- Sahu, P. (2020). Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. *Cureus*, 12(4). Doi: 10.7759/cureus.7541
- Saldaña, J. (2009). *The coding manual for qualitative researchers*. Sage Publications Ltd.
- Sandmire, D. A., Gorham, S. R., Rankin, N. E., & Grimm, D. R. (2012). The influence of art making on anxiety: A pilot study. *Art Therapy*, 29(2), 68-73. <https://doi.org/10.1080/07421656.2012.683748>
- Sarkar, S. (2021). Pandemic and the state. *Journal of Social and Economic Development*, 23(2), 366-372. <https://doi.org/10.1007/s40847-020-00129-7>
- Schelde, K. (2018). *Expression into Freedom: Voice and Sound your Destiny*. Steele Roberts.
- Schotanus-Dijkstra M.; Drossaert C.; Pieterse M.; Walburg, J.; Bohlmeijer E. (2015). Efficacy of a Multicomponent Positive Psychology Self-Help Intervention: Study Protocol of a Randomized Controlled Trial. *JMIR Research Protocols* ;4(3): e105. <http://www.researchprotocols.org/2015/3/e105/>
- Schultchen, D., Reichenberger, J., Mittl, T., Weh, T. R., Smyth, J. M., Blechert, J., & Pollatos, O. (2019). Bidirectional relationship of stress and affect with physical activity and healthy eating. *British journal of health psychology*, 24(2), 315-333. <https://doi.org/10.1111/bjhp.12355>
- Seifert G, Jeitler M, Stange R, Michalsen A, Cramer H, Brinkhaus B, Esch T, Kerckhoff A, Paul A, Teut M, Ghadjar P, Langhorst J, Häupl T, Murthy V and Kessler CS (2020). The Relevance of Complementary and Integrative Medicine in the COVID-19 Pandemic: A Qualitative Review of the Literature. *Front. Med.* 7:587749. doi: 10.3389/fmed.2020.587749
- Seligman, M.; Steen, T.; Park, N.; Peterson, C. (2005). Positive Psychology Progress. Empirical Validation of Interventions. *American Psychological Association*, Vol. 60, No. 5, 410–421. doi: 10.1037/0003-066X.60.5.410
- Sequeira C, Araújo O, Lourenço T, Freitas O, Carvalho JC, Costa P. (2022). The impact of the COVID-19 pandemic on the mental health of Portuguese university students. *Int J Ment Health Nurs*. Apr 6:10.1111/inm.12999. doi: 10.1111/inm.12999
- Sungwoo, L., Marisol, T., Amid, I., (2020). Chronic Stress and Unhealthy Dietary Behaviors among Low-Income African-American Female Caregivers. *Current Developments in Nutrition*. 2020 Mar; 4(3): <https://doi.org/10.1093/cdn/nzaa029>
- Talevi, D., Socci, V., Carai, M., Carnaghi, G., Faleri, S., Trebbi, E., ... & Pacitti, F. (2020). Mental health outcomes of the CoViD-19 pandemic. *Rivista di psichiatria*, 55(3), 137-144. doi 10.1708/3382.33569
- Thomas, N. (2013). Responding to mental health's mind-body problem. *Aust. N. Z. J. Psychiatry* 47, 973. <https://doi.org/10.1177/0004867413487232>
- Toussaint, L., Nguyen, Q. A., Roettger, C., Dixon, K., Offenbacher, M., Kohls, N., ... & Sirois, F. (2021). Effectiveness of progressive muscle relaxation, deep breathing, and guided imagery in promoting psychological and physiological states of relaxation. *Evidence-Based Complementary and Alternative Medicine*, 2021. <https://doi.org/10.1155/2021/5924040>

- Van Lith, T., Schofield, M.J., Fenner, P., (2013). Identifying the evidence-base for art-based practices and their potential benefit for mental health recovery: a critical review. *Disabil Rehabil.* 2013 Aug;35(16):1309-23. doi: 10.3109/09638288.2012.732188
- Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., & Sasangohar, F. (2020). Investigating mental health of US college students during the COVID-19 pandemic: Cross-sectional survey study. *Journal of medical Internet research*, 22(9), e22817. doi: 10.2196/22817
- Walsh, S. M., Chang, C. Y., Schmidt, L. A., & Yoepp, J. H. (2005). Lowering stress while teaching research: A creative arts intervention in the classroom. *Journal of Nursing Education*, 44(7), 330–333. <https://doi.org/10.3928/01484834-20050701-09>
- Weiner, L., Berna, F., Nourry, N., Severac, F., Vidailhet, P., & Mengin, A. C. (2020). Efficacy of an online cognitive behavioral therapy program developed for healthcare workers during the COVID-19 pandemic: the REduction of STress (REST) study protocol for a randomized controlled trial. *Trials*, 21(1), 1-10. <https://doi.org/10.1186/s13063-020-04772-7>
- Wellenzohn, S., Proyer, R. T., & Ruch, W. (2016). Humor-based online positive psychology interventions: a randomized placebo-controlled long-term trial. *The Journal of Positive Psychology*, 11(6), 584-594. doi: 10.1080/17439760.2015.1137624
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M., Gill, H., Phan, L., ... & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of affective disorders*, 277, 55-64. <https://doi.org/10.1016/j.jad.2020.08.001>