




**ADVERTIMENT.** L'accés als continguts d'aquesta tesi queda condicionat a l'acceptació de les condicions d'ús establertes per la següent llicència Creative Commons:  <https://creativecommons.org/licenses/?lang=ca>

**ADVERTENCIA.** El acceso a los contenidos de esta tesis queda condicionado a la aceptación de las condiciones de uso establecidas por la siguiente licencia Creative Commons:  <https://creativecommons.org/licenses/?lang=es>

**WARNING.** The access to the contents of this doctoral thesis it is limited to the acceptance of the use conditions set by the following Creative Commons license:  <https://creativecommons.org/licenses/?lang=en>

TESIS DOCTORAL

Impacto psicológico de la COVID-19 y retos post-pandemia  
en estudiantes universitarios: un enfoque integral



María Paola Jiménez Villamizar  
2025

**UAB**

Universitat Autònoma  
de Barcelona



# **Impacto psicológico de la COVID-19 y retos post-pandemia en estudiantes universitarios: un enfoque integral**

**María Paola Jiménez Villamizar**

Tesis doctoral:

**Impacto psicológico de la COVID-19 y retos post-pandemia en  
estudiantes universitarios: un enfoque integral**

Tesis doctoral presentada por  
María Paola Jiménez Villamizar

**Directores**

Dra. Anna Muro Rodríguez

Dr. Antoni Sanz Ruiz

**Tutor**

Dr. Antoni Sanz Ruiz

Doctorado en Psicología de la Salud y del Deporte  
Modalidad compendio de publicaciones  
Mención de Doctorado Internacional

**Barcelona**

**2025**



*We, as academicians and researchers, willingly study other groups, yet we seldom take time to look at our own profession.*

*Anonymous*

## **Fuentes de financiación**

Desde el 1 de enero de 2022 hasta la defensa de la tesis doctoral, María Paola Jiménez Villamizar ha sido beneficiario de una beca del Ministerio de Ciencia, Tecnología e Innovación de Colombia (Minciencias) a través de la Convocatoria 885 – 2020 de doctorados en el exterior. Obtuvo también una ayuda de movilidad del *Researcher Mental Health Observatory* - ReMO (proyecto Horizon-Cost Action de la Unión Europea - N° CA19117) para realizar una estancia de investigación en la división de Investigación y Posgrados de la facultad de Psicología en la Universidad Autónoma San Luis de Potosí (UASLP) (San Luis de Potosí, México), desde el 1 de marzo hasta el 3 de junio de 2023.

Esta tesis doctoral se enmarca, a su vez, en dos proyectos de investigación: por un lado, en el proyecto PSY-COVID, financiado por la Agencia de Gestión de Ayudas Universitarias y de Investigación (AGAUR) de la Generalitat de Catalunya (código de referencia 2020PANDE00025), bajo la dirección del Dr. Antoni Sanz Ruiz; y por otro, en el proyecto El Tercer Tiempo, financiado parcialmente por la Escuela de Doctorado de la Universitat Autònoma de Barcelona (UAB) y por la mencionada acción COST CA19117 de la Unión Europea.

## Agradecimientos

En la vida hay momentos memorables e imposibles de olvidar y este es uno de ellos el cual quedará grabado en mi mente y corazón, pues la felicidad es parte de mí, me pone más feliz aún saber que le doy felicidad a las personas que más quiero, y quiero agradecerles por haber sido mi soporte y mi aliento en todos estos años.

En primer lugar, agradezco a mis directores de tesis doctoral el Dr. Antoni Sanz Ruiz y la Dra. Anna Muro, por su cariño incesante, dedicación y apoyo en este paso. Al Dr. Toni por haber sido mi tutor compañía durante todo este proceso resolviendo cualquier duda, quien estuvo de cerca dándome la mano; agradezco inmensamente a la Dra. Anna Muro quien me motivo generando confianza en mí durante este proceso, además fue como una madre siempre velando por mi bienestar. Sin duda, ha sido un privilegio trabajar bajo la guía de dos supervisores, mentores y coautores excepcionales. Les agradezco profundamente por sus valiosas contribuciones a mi desarrollo profesional y personal. Un agradecimiento muy grato al Dr. Luis Martínez por haberme acogido de la forma más cálida durante mi estancia en México; gracias por el apoyo.

También quiero agradecer a todas las personas que participaron en los proyectos *PSY-COVID*, y el *Third Half*. Gracias, mis grandes amigos en este proceso como soporte en la encantadora Barcelona Angelica, Jairo, Elkin, María Paula, Laura, Juan Pablo, Ximena, Andrés. A mis compañero y colegas Iván, Clau, Max y Rodri. Quisiera expresar mis sinceros agradecimientos a Carmen Caballero, Guillermo Ceballos y Adalberto Campo profesores que, durante mis estudios universitarios, me alentaron y me introdujeron al mundo de la investigación y la academia.

Mis más profundos agradecimientos a mi gente en Colombia mis padres y mi hermano, cuyo mayor anhelo ha sido verme convertida en una mujer de bien, por su cariño, por cada consejo lleno de sabiduría. Gracias a mi familia, mis sobrinos, tíos, tías, primos y primas, por su presencia en todo momento, por sus palabras de aliento y el entusiasmo que me contagian en la vida.

De igual manera agradezco a Farid Rodríguez, mi apoyo constante a lo largo de este viaje, por ser mi roca. Gracias por tu paciencia infinita, tus palabras de aliento y tu fe inquebrantable en mí.

Y a todas aquellas personas que han compartido conmigo este viaje.

María Paola Jiménez Villamizar

Mayo 2025

Santa Marta, Colombia

Esta tesis es dedicada a Dios, por transformar lo difícil a fácil y la oscuridad en luz y mostrarme que de sus manos se pueden hacer muchas cosas, gracias porque me has heredado el tesoro más valioso que puede dársele a un hijo “Sus padres”.

Sin duda a mi madre María Antonia Villamizar Pérez y a mi padre Benigno Jiménez Fonseca quienes fueron soporte y amor incondicional en este proceso.

## Prefacio

La presente tesis doctoral “Impacto psicológico de la COVID-19 y retos post-pandemia en estudiantes universitarios: un enfoque integral” ha sido elaborada por compendio de publicaciones y ha sido aprobada por la comisión académica del programa de doctorado de Psicología de la Salud y el Deporte de la Universidad Autónoma de Barcelona. Esta tesis está enmarcada dentro de dos proyectos: la primera parte se incluye en el proyecto *PSY-COVID*, financiado por la Agencia de Gestión de Ayudas Universitarias y de Investigación (AGAUR; Generalitat de Catalunya) con código de referencia 2020PANDE00025. Su investigador principal es el Dr. Antoni Sanz Ruiz); la segunda parte está enmarcada en el proyecto *El Tercer Tiempo* financiado parcialmente por la Escuela de Doctorado de la UAB y por la Unión Europea (Cost Action 19117) y cuya investigadora principal es la Dra. Anna Muro. Ambos proyectos fueron desarrollados durante el periodo comprendido entre octubre del 2020 hasta diciembre del 2024. Asimismo, esta tesis doctoral opta a la Mención Internacional otorgada por la Universitat Autònoma de Barcelona, en cumplimiento de los requisitos establecidos por dicha universidad.

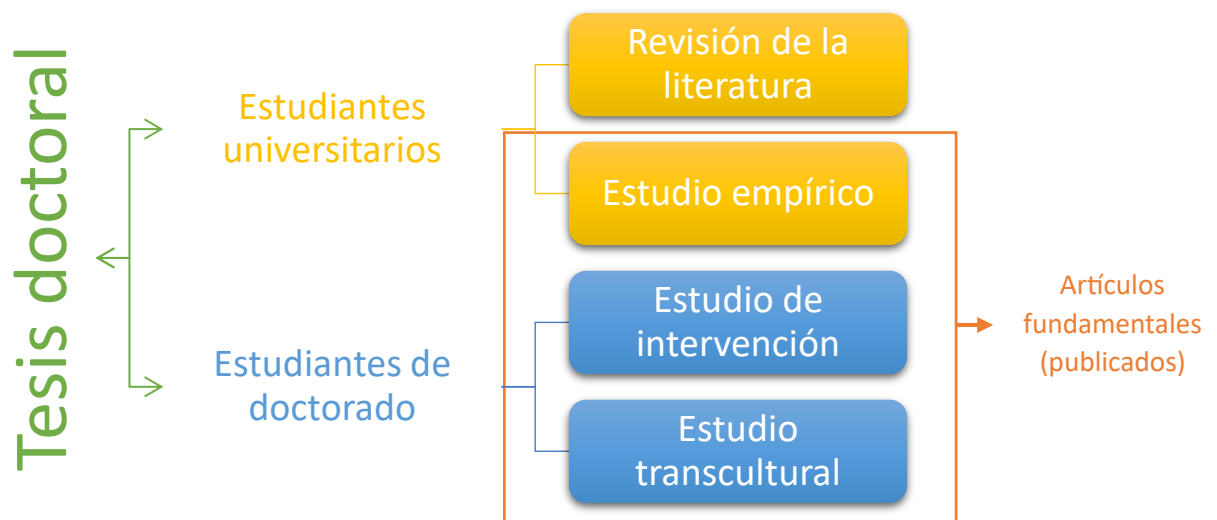
Esta tesis nació en plena pandemia por COVID-19, motivada por la necesidad de comprender cómo esta situación impactó psicológicamente a diversos colectivos vulnerables, en particular a los jóvenes estudiantes universitarios. Estos se vieron especialmente afectados debido a las características propias de su etapa evolutiva, así como por los efectos que las prolongadas medidas de aislamiento y confinamiento tuvieron sobre su desarrollo psicológico y emocional. A partir del análisis del contexto psicosocial y sanitario durante la pandemia, se detectó la necesidad de diseñar estrategias de promoción del bienestar desde las universidades como respuesta a este impacto, por lo que el presente trabajo cuenta con una enfoque de revisión bibliográfica y de estudio empírico y este, a su vez, con parte descriptiva-observacional y otra cuasi-experimental.

Está compuesto por un compendio de 4 estudios (3 de ellos publicados en revistas indexadas y de impacto y otro en un repositorio de *preprints* indexado) analizando estudiantes de grado y postgrado, como ilustra la figura 1. Esta tesis doctoral reporta un estudio de revisión de la literatura científica (Artículo 1), un estudio empírico observacional (Artículo 2), un estudio experimental de intervención (Artículo 3) y un estudio observacional transcultural (Artículo 4). Es importante resaltar que el Artículo 4 de este compendio, de naturaleza observacional y transcultural, deriva del estudio desarrollado en el marco de la estancia de investigación internacional realizada en la Universidad Autónoma de San Luis Potosí (UASLP, México). Esta estancia, llevada a cabo durante el primer

semestre del año 2024 (marzo - junio), se enmarca dentro de los requisitos normativos exigidos para la obtención de la Mención Internacional del título de doctorado, conforme a la normativa de la Universitat Autònoma de Barcelona. Durante este periodo, se realizaron actividades de colaboración científica, análisis de datos y producción académica en el marco del proyecto “El Tercer Tiempo”, lo cual permitió incorporar una perspectiva transcultural a la investigación sobre el impacto psicológico de la pandemia en estudiantes universitarios.

Actualmente, tres de los artículos que componen esta tesis se encuentran publicados (Artículos 2, 3 y 4), mientras que el primero (Artículo 1) ha sido enviado para su evaluación por pares.

**Figura 1.** Estudios vinculados a la tesis doctoral



El contenido de esta tesis presenta una introducción general que recopila todo el panorama antes, durante y después de la pandemia por COVID-19 de la salud mental y bienestar en estudiantes universitarios, adoptando una visión global sobre la situación y la importancia de la temática. A continuación, se incluye un segundo apartado en el cual se exponen los resultados del artículo 1 y artículo 2 en universitarios, así como los resultados del artículo 3 y artículo 4 en el colectivo específico de doctorandos. Posteriormente se presenta la discusión, donde se analizan de forma conjunta todos los datos y los resultados de la tesis, se contrastan con resultados de otras investigaciones previas y se identifican las fortalezas y las limitaciones de la presente tesis. Finalmente, el apartado de conclusiones sintetiza y destaca los hallazgos más relevantes para la investigación psicoeducativa y para las políticas sanitarias derivadas de esta tesis, y se proponen las líneas de investigación futura.

Los Artículos 2, 3 y 4 enumerados según la secuencia argumental de este trabajo, están disponibles en acceso abierto en revistas indexadas en *Scimago Journal & Country Rank (SJR)* y *Journal of Citation Reports (JCR)*. El artículo 1 se encuentra depositado en un repositorio de acceso abierto indexado en el *Preprint Citation Index* de Clarivate. Asimismo, todas las bases de datos utilizadas en esta tesis doctoral están disponibles en acceso abierto, garantizando la transparencia y la reproducibilidad de la investigación. En la siguiente tabla se presenta una descripción de las métricas de las revistas en las que se publicaron o se aceptaron para publicación los artículos directamente vinculados a esta tesis doctoral. Cabe destacar que los estudios que implicaron la participación de seres humanos cuentan con la aprobación del Comité de Ética en la Investigación con Seres Humanos de la Universitat Autònoma de Barcelona (CeREC-UAB) y fueron desarrollados conforme a los principios éticos establecidos en la Declaración de Helsinki.

Resumen de publicaciones del presente compendio publicadas

Artículo	Autores	Revista	JCR*	SJR*
2	Jiménez- Villamizar et al., (2023)	Ansiedad y Estrés	Q4	Q3
2	Jiménez- Villamizar et al., (2024)	Psychology, Society & Education	Q3	Q2
4	Jiménez- Villamizar et al., (2025)	Duazary	Q4	--

\*Según métricas más recientes (2023)

### Lista de compendio de publicaciones

Esta tesis se basa en los siguientes artículos:

#### Artículo no fundamental (no publicado):

#### Artículo 1 (publicado en repositorio de preprints indexado y en proceso de revisión por pares en revista indexada):

Jiménez-Villamizar, M., Comendador Vázquez, L., Sanabria-Mazo, J., Mateo-Canedo, C., Losilla, J., Muro, A., & Sanz, A. (2025). Mental health in the short- and long-term adaptation processes of university students during the COVID-19 pandemic: A systematic review and meta-analysis [Preprint]. *MedRxiv*. <https://doi.org/10.1101/2025.03.14.25323978>

## **Artículos fundamentales (publicados):**

### **Artículo 2:**

Jiménez-Villamizar, M., Muro, A., Navarro, J.-B., Carmona, M., Cladellas, R., Feliu-Soler, A., Reche-Camba, E., López-Fernández, D., Méndez-Ulrich, J. L., Selva, C., & Sanz, A. (2023). Predictive factors of the psychological impact of the COVID-19 pandemic on university students: A study in six Ibero-American countries. *Ansiedad y Estrés*, 29(3), 153–162.

<https://doi.org/10.5093/ANYES2023A19>

### **Artículo 3:**

Jiménez-Villamizar, M., Tejeda-Gallardo, C., Becerra-Rojas, A., Devoto-Araya, M., Fernández-García, M., López-García, R., Bonilla, I., Tadić Vujčić, M., T. Mol, S., Sanz-Ruiz, A., & Muro-Rodríguez, A. (2024). The Third Half: a positive psychoeducational program to promote well-being and mental health among early career researchers. *Psychology, Society & Education*, 16(3), 20–30.

<https://doi.org/10.21071/pse.v16i3.17180>

### **Artículo 4 (observacional transcultural)\*:**

Jiménez-Villamizar, M., Martínez-Blanquet, L., Sanz, A., Muro-Rodríguez, A. (2025). Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural. *Duazary*, 20(4), 233-241.

<https://doi.org/10.21676/2389783X.5579>

\* El Artículo 4 se realizó durante una estancia predoctoral en la Universidad Autónoma San Luis Potosí (San Luis Potosí, México) entre el 1 de marzo al 3 junio del 2024. Por tanto, a través de esta tesis doctoral se opta a la mención de Doctorado Internacional

## **Repositorio de bases de datos:**

### **Registro PROSPERO artículo 1 (revisión sistemática):**

Jiménez-Villamizar, M. P., Comendador Vázquez, L., Losilla Vidal, J.-M., Sanabria-Mazo, J. P., Mateo Canedo, C., Muro Rodríguez, A., & Sanz, A. (2024). *Mental health and individual differences in the short- and long-term adaptation processes of university students during the COVID-19 pandemic* [Registro en PROSPERO]. PROSPERO.

<https://www.crd.york.ac.uk/PROSPERO/view/CRD42022330361>

**Base de datos artículo 1 (revisión sistemática):**

Jiménez-Villamizar, M. P., Comendador Vázquez, L., Losilla Vidal, J.-M., Sanabria-Mazo, J. P., Mateo Canedo, C., Muro Rodríguez, A., & Sanz, A. (2025). Mental health and individual differences in the short- and long-term adaptation processes of university students during the COVID-19 pandemic [Data set]. *Figshare*. <https://doi.org/10.6084/m9.figshare.28597481>

**Base de datos artículo 2 (empírico):**

Jiménez-Villamizar, M., Muro, A., Navarro, J.-B., Carmona, M., Cladellas, R., Feliu-Soler, A., Reche-Camba, E., López-Fernández, D., Méndez-Ulrich, J. L., Selva, C., & Sanz, A. (2022). PSY-COVID-1, Study of University Students [Data set]. *Figshare*. <https://figshare.com/s/4997cfc605c496da1a0a>

**Base de datos artículo 3 (programa de intervención):**

Jiménez-Villamizar, M., Tejada-Gallardo, C., Becerra-Rojas, A., Devoto-Araya, M., Fernández-García, M., López-García, R., Bonilla, I., Tadić Vujčić, M., T. Mol, S., Sanz-Ruiz, A., & Muro-Rodríguez, A. (2024). The Third Half: A psychoeducational program to promote well-being and mental health among Early Career Researchers [Data set]. *OSF*. [https://osf.io/pqym4/?view\\_only=055f1dc2a7ef4230b79e6d19cf53ca0e](https://osf.io/pqym4/?view_only=055f1dc2a7ef4230b79e6d19cf53ca0e)

**Base de datos artículo 4 (observacional transcultural):**

Jiménez-Villamizar, M., Martínez-Blanquet, L., Sanz, A., Muro-Rodríguez, A. (2025). Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural [Data set]. *OSF*. <https://osf.io/srm72>



## Tabla de contenido

ABREVIATURAS .....	3
ÍNDICE DE TABLA .....	4
ÍNDICE DE FIGURAS .....	5
RESUMEN.....	6
Palabras clave.....	7
ABSTRACT .....	8
Keywords: .....	9
Capítulo 1. Introducción.....	10
<b>1. Indicadores Pre-pandémicos de salud mental: una línea base en jóvenes universitarios y doctorandos.....</b>	<b>12</b>
<b>2. Transformaciones psicológicas en tiempos de crisis: efectos de la pandemia en la salud mental universitaria y doctoral.....</b>	<b>14</b>
<b>3. Repercusiones Psicológicas Persistentes: La Salud Mental en el Contexto Post-Pandémico.....</b>	<b>18</b>
<b>4. Referencias.....</b>	<b>20</b>
Capítulo 2. Objetivos .....	25
Capítulo 3. Publicaciones.....	27
<b>1. Artículo 1 (en proceso de revisión y publicación): .....</b>	<b>30</b>
Artículos fundamentales.....	58
<b>2. Artículo 2: .....</b>	<b>58</b>
<b>3. Artículo 3: .....</b>	<b>69</b>
<b>4. Artículo 4*: .....</b>	<b>81</b>
Capítulo 4. Resultados y discusión .....	94
<b>Resultados y discusión .....</b>	<b>95</b>
<b>1. Resultados .....</b>	<b>96</b>
<b>1.1. Impacto psicológico de la pandemia de COVID-19 en estudiantes universitarios .....</b>	<b>96</b>
<b>1.2. Salud mental y bienestar en doctorandos.....</b>	<b>97</b>
<b>2. Discusión .....</b>	<b>99</b>
<b>2.1. Comparación con estudios previos.....</b>	<b>99</b>
<b>2.2. Diferenciación del impacto nacional (Cataluña) vs. internacional (OMS - ONU) ...</b>	<b>101</b>
<b>3. Fortalezas y limitaciones.....</b>	<b>102</b>
<b>4. Referencias.....</b>	<b>104</b>
Capítulo 5. Conclusiones.....	109
<b>1. Conclusiones generales del estudio.....</b>	<b>110</b>

<b>2. Relevancia y principales aportaciones .....</b>	<b>112</b>
<b>3. Futuras líneas de investigación .....</b>	<b>114</b>
<b>4. Implicaciones prácticas .....</b>	<b>115</b>
Capítulo 6. Anexos .....	116
Otros estudios en marco de la tesis doctoral .....	116

## ABREVIATURAS

	<b>En inglés</b>	<b>En español</b>
ACHA	American College Health Association	Asociación Estadounidense de Salud Universitaria
ARWU	Academic Ranking of World Universities	Ranking Académico de las Universidades del Mundo
COVID-19	Coronavirus disease 2019	Enfermedad por coronavirus de 2019
ECR	Early Career Researchers	Investigadores de carrera temprana
JBI	Joanna Briggs Institute	Instituto Joanna Briggs
OMS	World Health Organization	Organización Mundial de la Salud
ONU	United Nations Organization	Organización de las Naciones Unidas
ReMO	Researcher Mental Health Observatory	Observatorio de Salud Mental en Investigadores
RS	Systematic Review	Revisión Sistemática
SARS-COV-2	Severe Acute Respiratory Syndrome Coronavirus 2	Coronavirus de Tipo 2 Causante del Síndrome Respiratorio Agudo Severo
UNESCO	United Nations Educational, Scientific and Cultural Organization	Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura

## ÍNDICE DE TABLA

<b>Tabla 1.</b> Tabla comparativa de enfoque y métodos de los estudios de la tesis doctoral .....	98
<b>Tabla 2.</b> Fortalezas y limitaciones combinadas de los artículos incluidos en la tesis doctoral.....	103
<b>Tabla 3.</b> Hallazgos claves de la tesis doctoral .....	112

## ÍNDICE DE FIGURAS

<b>Figura 1.</b> Factores que influyen en la salud mental en contextos universitarios. ....	11
<b>Figura 2.</b> Mapas globales de estudios sobre ansiedad, depresión y estrés: Resultados de una revisión sistemática .....	15
<b>Figura 3.</b> Estudios vinculados a la tesis doctoral .....	95

## RESUMEN

La salud mental en las universidades es un foco de interés debido al aumento del malestar psicológico en la comunidad de estudiantes y, en general, en la población adolescente y jóvenes adultos, durante y después de la pandemia COVID-19. En este marco, la presente tesis doctoral tuvo dos objetivos: (1) Examinar el impacto psicológico de la pandemia de COVID-19 en estudiantes universitarios y de doctorado en contextos socioculturales diversos, analizando factores individuales y diferencias transculturales y (2) Diseñar, implementar y evaluar la eficacia de estrategias psicoeducativas para promover el bienestar y mitigar el malestar emocional en los estudiantes universitarios. Estos objetivos se han logrado a lo largo de cuatro estudios que, entre 2020 y 2024, analizaron más de doscientos-mil estudiantes universitarios: el primer estudio consistió en una revisión sistemática de la literatura científica y metaanálisis que incluyó 73 estudios, con una muestra total de 209.761 estudiantes; el segundo estudio consistió en un estudio descriptivo transcultural que analizó una muestra de 7.601 participantes de seis países (Argentina, Colombia, Ecuador, España, México y Uruguay) durante la pandemia del COVID-19. Los dos últimos estudios fueron realizados en el contexto postpandemia con una muestra total de 448 estudiantes de doctorado, dividida en una investigación cuasi-experimental aplicada (análisis de la eficacia de un programa de intervención) con una participación de 97 doctorandos y un estudio observacional transcultural (México - España), con un total de 351 participantes. Los datos obtenidos permitieron corroborar el impacto psicológico negativo de la pandemia en el contexto académico, mostrando que factores como la soledad, la personalidad emocionalmente inestable y ser mujer se relacionaron con mayores niveles de malestar; también mostraron prevalencias de ansiedad, depresión y somatización por encima del 40%, significativamente superiores a las de la población general. También se encontraron altas prevalencias de ansiedad y depresión entre doctorandos y se implementó un programa de intervención multicomponente (el Tercer Tiempo) que mostró una reducción del malestar emocional en un 17,6%, de la ansiedad en un 33,1% y de los síntomas depresivos en un 24,4%. Estos resultados indican que el programa tuvo un impacto positivo en la salud mental de estudiantes universitarios. Finalmente, el análisis diferencial entre doctorandos de universidades mexicanas y españolas mostró prevalencias de ansiedad y depresión mayores en las españolas, y se identificaron factores de riesgo para la salud mental como ser estudiante internacional y tener menor edad para cursar un doctorado.

En conclusión, todos estos hallazgos permiten sugerir que los estudiantes universitarios son un colectivo de riesgo para la salud mental y que es importante diseñar estrategias psicoeducativas eficaces de apoyo y prevención, así como la necesidad de generalizar políticas públicas que impulsen entornos académicos más motivadores, sostenibles y saludables y que faciliten el desarrollo óptimo de los estudiantes.

**Palabras clave:** academia; bienestar; salud mental; universitarios; doctorandos.

## ABSTRACT

Mental health in universities is a focus of interest due to the increase in psychological distress in the student community and, in general, in the adolescent and young adult population, during and after the COVID-19 pandemic. In this framework, the present doctoral thesis had two objectives: (1) To examine the psychological impact of the COVID-19 pandemic on undergraduate and doctoral students in diverse sociocultural contexts, analyzing individual factors and cross-cultural differences and (2) To design, implement and evaluate the effectiveness of psychoeducational strategies to promote well-being and mitigate emotional distress in university students. These objectives have been achieved throughout four studies that, between 2020 and 2024, analyzed more than two hundred thousand university students: the first study consisted of a systematic review of the scientific literature and meta-analysis that included 73 studies, with a total sample of 209,761 students; The second study consisted of a cross-cultural descriptive study that analyzed a sample of 7,601 participants from six countries (Argentina, Colombia, Ecuador, Spain, Mexico, and Uruguay) during the COVID-19 pandemic. The last two studies were conducted in the post-pandemic context with a total sample of 448 doctoral students, divided into applied quasi-experimental research (analysis of the effectiveness of an intervention program) with the participation of 97 doctoral students and a cross-cultural observational study (Mexico - Spain), with a total of 351 participants. The data obtained corroborated the negative psychological impact of the pandemic in the academic context, showing that factors such as loneliness, emotionally unstable personality, and being female were associated with higher levels of distress; they also showed prevalences of anxiety, depression, and somatization above 40%, significantly higher than those of the general population. High prevalences of anxiety and depression were also found among doctoral students, and a multicomponent intervention program (Third Time) was implemented, which showed a reduction in emotional distress by 17.6%, anxiety by 33.1%, and depressive symptoms by 24.4%. These results indicate that the program had a positive impact on the mental health of university students. Finally, the differential analysis between doctoral students at Mexican and Spanish universities showed higher prevalences of anxiety and depression in Spanish universities, and risk factors for mental health were identified, such as being an international student and being younger to pursue a doctoral program.

In conclusion, all these findings suggest that university students are a group at risk for mental health and that it is important to design effective psychoeducational support and prevention strategies,

as well as the need to generalize public policies that promote more motivating, sustainable, and healthy academic environments that facilitate optimal student development.

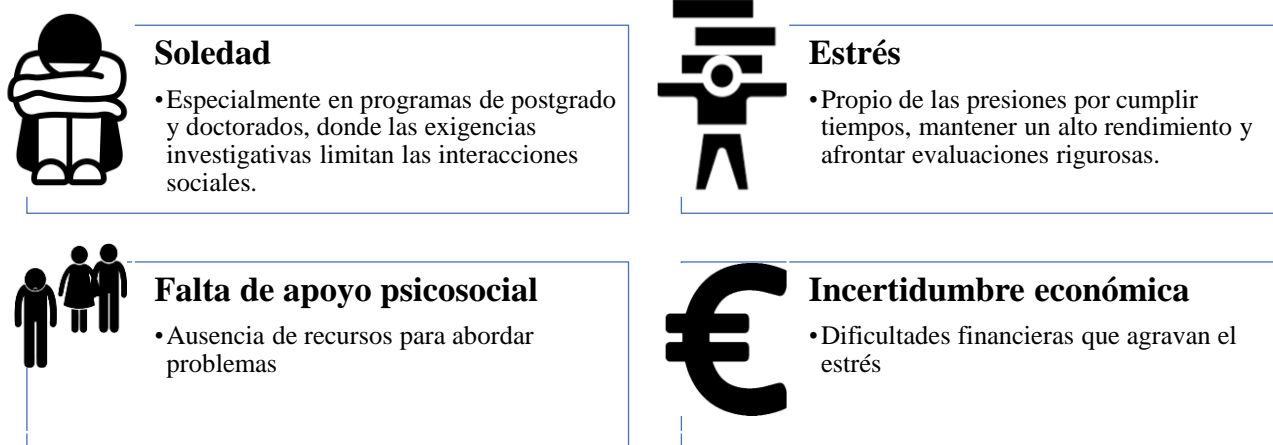
**Keywords:** academia; well-being; mental health; university students; PhD students.

## **Capítulo 1. Introducción**

## INTRODUCCIÓN

La salud mental se ha consolidado como un pilar fundamental en la construcción del bienestar y la salud integral, y se ha incluido en las políticas sanitarias y educativas de todo el mundo (WHO, 2022; UN, 2023) añadiendo un desafío adicional en la planificación académica y curricular de todas las etapas educativas, incluyendo la educación superior. Es un tema relevante en la actualidad (Evans et al., 2018; Kismihók et al., 2022), ya que este fenómeno no solo supone una influencia perniciosa en el rendimiento académico en el ámbito universitario, sino también en el desarrollo de competencias necesarias para la proyección profesional de los estudiantes. Estas competencias, conocidas como *transversal skills* o *soft skills*, incluyen habilidades de comunicación e interpersonales, así como la capacidad de manejar el estrés y las emociones (Rincón, 2019). La educación superior es una etapa significativa y desafiante para el ciclo vital de los estudiantes debido a las demandas y retos que presenta en su vida, desde la carga académica hasta la transición a la etapa profesional y su adaptación a ambientes sociales complejos (Ross et al., 2024). La transición que implica entrar a la universidad y, en el caso de los doctorandos, la inmersión a la investigación intensiva genera una serie de retos que pueden afectar a la salud mental. Estos factores podrían ser:

**Figura 1.** Factores que influyen en la salud mental en contextos universitarios.



*Fuente:* elaboración propia basado en Campbell et al. (2022) y Jiménez-Villamizar et al. (2023)

En la educación superior, la salud mental se relaciona con factores sistémicos, colectivos y estructurales. Los problemas de salud mental no tratados están vinculados con la deserción, los fracasos académicos e incluso con la calidad profesional de aquellos que egresan de las universidades

(Sinval et al., 2025). Por lo tanto, las instituciones deben asumir un rol activo en la promoción de la salud mental mediante programas de prevención, intervención temprana y atención integral, puesto que afecta al rendimiento cognitivo, conductual y académico de los estudiantes (Muro et al., 2018). Además, en los estudiantes de doctorado, la salud mental adquiere mayor relevancia debido al impacto en la productividad investigadora, permanencia en programas de alta exigencia y el desarrollo de carreras académicas (Lisnyj et al., 2022; Muro et al., 2022). El estudio de este colectivo es necesario para identificar oportunidades y brechas para el diseño de estrategias más efectivas. Sin embargo, el estudio de la salud mental presenta desafíos metodológicos y epistemológicos. Los modelos dominantes han favorecido un enfoque biomédico, que es útil, pero puede ser reduccionista a la hora de dar cuenta de la multidimensionalidad del fenómeno (Kotsyubinsky & Kotsyubinsky, 2023). Por lo tanto, existe la necesidad de una perspectiva biopsicosocial, que integre enfoques interdisciplinarios que contemple dimensiones psicológicas y contextuales para estudiar con métodos cuantitativos y cualitativos la salud mental en el ámbito universitario. Esta merece una atención prioritaria, puesto que el bienestar y rendimiento óptimo de los estudiantes universitarios en general, y los doctorandos en particular, no solo está vinculado a los resultados académicos y profesionales individuales y colectivos de un país, sino también a la creación de una sociedad más próspera, equitativa y sostenible (Jiménez-Villamizar et al., 2024).

### **1. Indicadores Pre-pandémicos de salud mental: una línea base en jóvenes universitarios y doctorandos**

Antes de la pandemia producto de la COVID-19, la salud mental en universitarios ya era un tema de interés y preocupación especialmente en universidades europeas y norteamericanas. En ese momento ya se reportaron cifras entre el 30 % y 40 % de deterioro del bienestar en estudiantes universitarios e investigadores de carrera temprana (*Early Career Researchers*; ECR) y un riesgo mayor de desarrollar ansiedad, depresión, estrés, riesgo suicida y burnout (Larivière, 2012; Woolston, 2019). La *American College Health Association* (ACHA, 2019) reportó que uno de cada cinco estudiantes presentaba síntomas relacionados con un trastorno mental y uno de cada tres había padecido estrés. Algunos factores como las exigencias académicas, las experiencias sociales, las presiones económicas y las dificultades relacionadas con la incertidumbre profesional, pueden ser predictores del rendimiento académico y la salud mental de los estudiantes universitarios (Campbell et al. 2022; Mendes y Pérez, 2022). Algunos autores (Cahill et al., 2023; Shim et al., 2022) sugieren que el estigma asociado con la busca de ayuda profesional y la falta de redes de apoyo integral en las universidades representan un desafío para el bienestar de la comunidad académica, mostrando un entorno poco preparado para abordar de manera efectiva los desafíos de la salud mental más allá de

factores individuales, y sugiriendo que los problemas de salud mental reflejan dinámicas sociales e institucionales que no facilitan el desarrollo óptimo del talento de los estudiantes .

El panorama en los doctorados antes de la pandemia presentaba desafíos únicos y específicos que los diferencian de los estudiantes de pregrado. Son un grupo que combina presiones académicas, personales y sociales que lo posiciona como una población vulnerable debido a la alta exigencia académica, la incertidumbre y condiciones de la carrera doctoral. Los programas de doctorado requieren una intensidad relacionada con la elaboración de la tesis, que no solamente requiere el desarrollo de competencias técnicas específicas del oficio investigador como metodología o escritura científica, sino el desarrollo en un entorno altamente competitivo y burocrático, sumado a las demandas de movilidad internacional que exigen al joven investigador confrontar una carrera solitaria que a su vez requiere habilidades sociales y capacidad de adaptación a diversos entornos y equipos. Esto podría explicar la necesidad de construir redes de apoyo dentro del ámbito universitario y científico (Cahill et al., 2023). Un estudio de Sverdlik et al., (2018) expone que el aislamiento social es uno de los principales factores de riesgo relacionado con la depresión y ansiedad en doctorandos. A todo esto se le suma la presión por el éxito en un entorno altamente competitivo en términos de publicaciones y financiamiento, lo que genera una constante sensación de miedo al fracaso (Charles et al., 2021) e incertidumbre laboral. Más del 31 % de los doctorandos reporta preocupación y agotamiento emocional, lo cual no solo afecta su bienestar psicológico, sino también su productividad científica, capacidad investigadora y motivación. Estos factores podrían explicar la deserción en los programas doctorales, que en algunos países supera el 39 % (Alves et al., 2024; Hasgall, et al., 2019; Woolston, 2019). En este sentido, el abandono académico puede entenderse como una manifestación tangible del deterioro en la salud mental del estudiantado doctoral, en tanto surge cuando las tensiones del entorno académico superan las capacidades de afrontamiento individuales y no encuentran un contrapeso en políticas institucionales de bienestar y acompañamiento (Levecque et al., 2017), lo que refuerza la necesidad de repensar los modelos de formación doctoral desde una perspectiva que integre el bienestar como componente estructural y no meramente accesorio del proceso formativo.

Aunque ambos grupos de estudiantes (estudiantes de grado y doctorandos) enfrentan retos significativos, existen diferencias notables en la naturaleza de las presiones que experimentan. Cabe resaltar que los estudiantes de grado están más expuestos a problemas relacionados con la transición a la edad adulta, la adaptación a un nuevo contexto y el equilibrio entre responsabilidad, independencia y autonomía (ACHA, 2019; Larivière, 2012; Woolston, 2019), por su parte los doctorandos se enfrentan a retos asociados con la carga investigadora y la preparación para un futuro

incierto en una etapa vital, la primera adultez, en la que se busca estabilidad y seguridad (Charles et al., 2021; Sverdlik et al., 2018). Este panorama, antes de la pandemia, reflejaba una situación crítica que señala una tendencia preexistente, agravada por la pandemia. De esta manera, el estudio del bienestar psicológico y emocional en estudiantes de educación superior es fundamental para comprender el desarrollo de la salud mental desde una perspectiva sistémica, estructural y evolutiva, y no sólo desde una perspectiva biologicista e individual, sino también para comprender cómo las características culturales, académicas y profesionales pueden tener repercusiones individuales y sociales. Identificar los factores protectores y de riesgo para el desarrollo óptimo de los jóvenes adultos en la etapa de educación superior, puede mejorar el diseño de estrategias psicoeducativas más inclusivas, efectivas, promover el bienestar integral, la optimización del talento y del rendimiento académico, y con ellos el desarrollo de colectivos profesionales y sociedades más productivas y saludables en un escenario pospandémico.

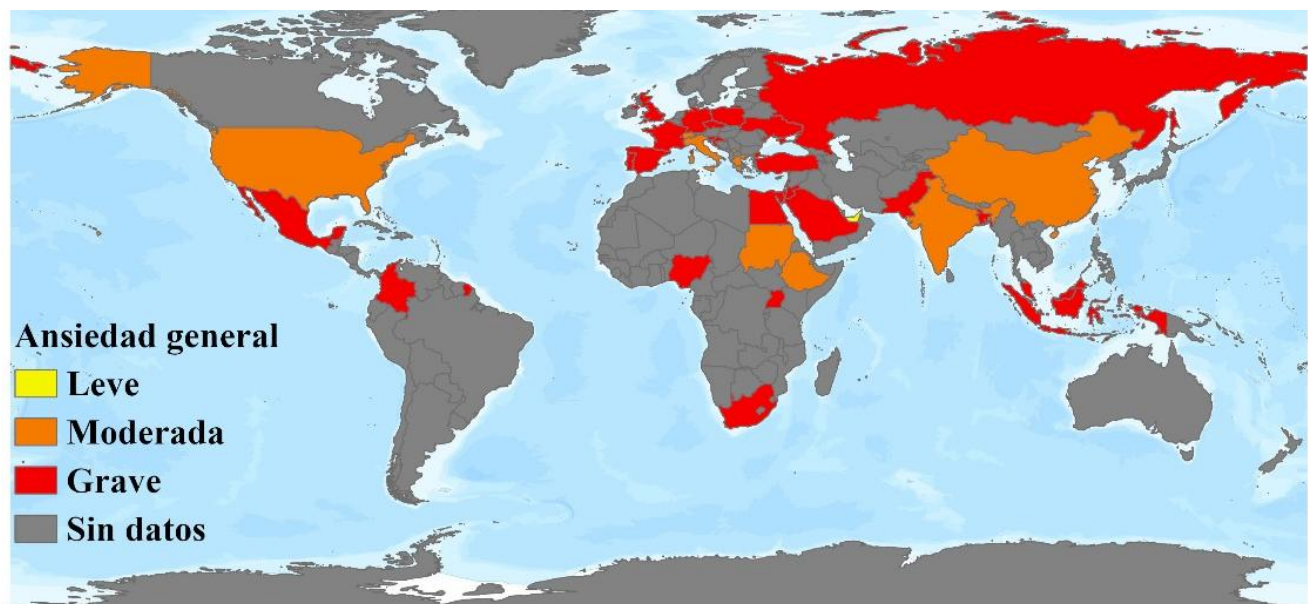
## **2. Transformaciones psicológicas en tiempos de crisis: efectos de la pandemia en la salud mental universitaria y doctoral**

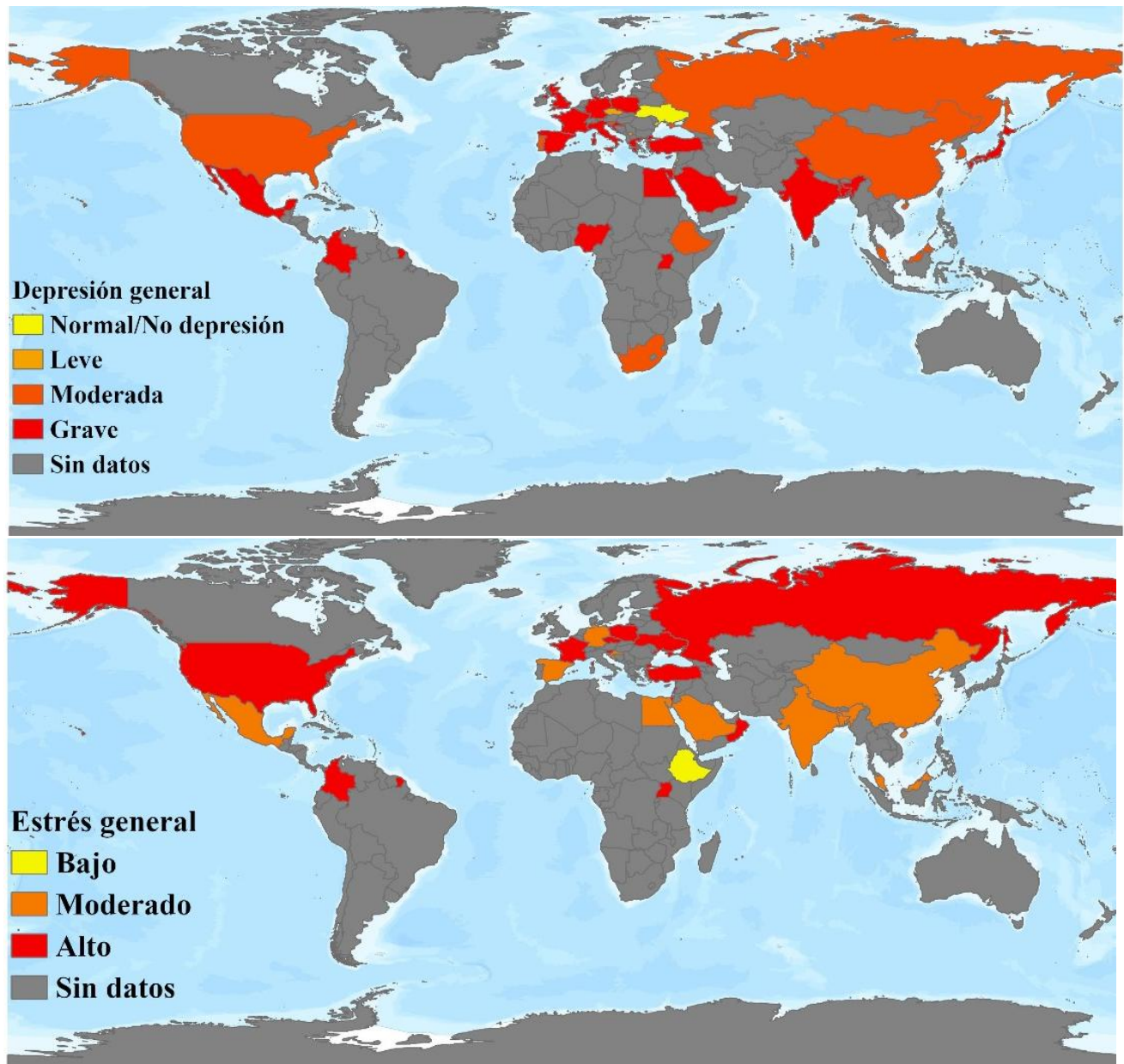
No obstante, la pandemia por COVID-19, que se expandió a nivel mundial en 2020, agudizó los problemas de salud mental en poblaciones adolescentes y jóvenes, afectando también a estudiantes universitarios y doctorandos. Esta situación exacerbó una crisis preexistente en la educación superior que ya se evidenciaba antes de la pandemia. Según la Organización Mundial de la Salud (WHO, 2022), los niveles de ansiedad y depresión se duplicaron durante este periodo, particularmente en jóvenes adultos, ya que tuvieron que enfrentar un aislamiento social sin precedentes en una etapa evolutiva cuyas características principales son la necesidad de autonomía, la entrada en la vida profesional y la socialización. Uno de los sectores de la población joven más afectados por este impacto fue la de estudiantes en la etapa de educación superior, ya que más de un 90 % enfrentaron interrupciones en sus rutinas académicas y sociales que duraron unos dos años (CEPAL & UNESCO, 2020; UN, 2021). Las universidades fueron las últimas en levantar las medidas de confinamiento para la mitigación del virus SARS-COV-2, adaptando las metodologías de aprendizaje presencial por procesos de formación digital y en línea, permitiendo el seguimiento de los objetivos curriculares a distancia; no obstante, se produjeron cambios tan drásticos en las rutinas diarias de los estudiantes en su socialización y organización personal que éstos afectaron significativamente a sus hábitos, lo que, sumados al miedo y a la ansiedad por el contagio y la amenaza del virus, situó a los estudiantes universitarios como uno de los colectivos más vulnerables entre la población joven y adulta (Alomyan, 2021; Jiménez-Villamizar et al., 2023; Sanabria-Mazo et al., 2021). Revisiones de literatura iniciales reportaron cifras de estrés entre el 28 % y 70 % (un rango de variabilidad

determinado por el tipo de restricciones que se aplicaron en cada país), un 36 % de ansiedad y casi un 40% de depresión (Al Mamun et al., 2021; Muñoz et al., 2020; Jiménez-Villamizar et al., 2023). Estos resultados iniciales sugirieron que la pandemia podía afectar severamente el aumento de emociones negativas y problemas psicológicos en este grupo poblacional, doblemente más afectado que la población general (Jiménez- Villamizar et al., 2023). La incidencia resultó aún más intensa en países que aplicaron medidas más restrictivas de confinamiento, como es el caso de España, uno de los más afectados por la pandemia. En un estudio realizado en el sistema universitario catalán, con la participación de 9 universidades y 19.001 estudiantes, incluyendo estudiantes de pregrado, postgrado y doctorandos, se observó un porcentaje mayor de síntomas de ansiedad (42 %) y depresión (46 %), mientras que la ideación suicida fue del 5.1 % y el agotamiento emocional, del 73 % (Amador-Campos et al., 2023).

En la Figura 2 se presenta un gráfico con la distribución geográfica de problemas de salud mental en estudiantes universitarios, según datos extraídos de una revisión sistemática de la literatura científica sobre salud mental en estudiantes universitarios durante la pandemia de COVID-19 (Jiménez-Villamizar, et al., 2025).

**Figura 2.** Mapas globales de estudios sobre ansiedad, depresión y estrés: Resultados de una revisión sistemática





*Fuente:* elaboración propia basado en Jiménez-Villamizar, et al., (2025).

Al igual que lo anteriormente comentado acerca de las diferencias pre-pandemia, si bien todos los universitarios sufrieron el impacto psicológico de la pandemia, los doctorandos experimentaron retos aún más particulares por la naturaleza de la formación doctoral, sus programas académicos y los cambios aplicados para afrontar la pandemia relacionados con las restricciones de movilidad y el cierre de espacios de trabajo, lo que limitó el acceso a recursos esenciales para el progreso de sus investigaciones (Byrom, 2020), la reducción de oportunidades de financiamiento y la incertidumbre del mercado laboral, incrementando sus niveles de estrés (Satinsky et al., 2021), fatiga mental en el

proceso de adaptación a nuevos formatos de investigación y enseñanza, además del aislamiento social, especialmente entre los doctorandos de primer año e internacionales que estaban distanciados de sus redes de apoyo inicial y con limitaciones para establecer nuevas redes sociales en las universidades o centros de acogida (Naumann et al., 2022). Por ejemplo, un estudio realizado con 1.018 doctorandos españoles reportó que el 44 % de investigadores en formación presentaba síntomas de depresión que superaban el umbral clínico y un 59 % mostraba síntomas de trastorno de ansiedad generalizada (Estupiñá et al., 2024).

Aunque antes de la pandemia ya se hablaba de una crisis de salud mental en la carrera investigadora temprana (Evans et al., 2018; Leveque et al., 2017; Wolston, 2019), se observó cómo durante la pandemia se hallaron mayores niveles de soledad, agotamiento, depresión y disminución del bienestar, problemas que no solo estaban vinculados con las medidas restrictivas, sino con la propia naturaleza de la formación doctoral, sugiriendo la necesidad urgente de mejorar la cultura del trabajo y la formación científica y-académica (Naumann et al., 2022).

Es fácil observar que ambos grupos de universitarios compartieron desafíos comunes, cómo la interrupción de sus rutinas sociales y académicas, el aislamiento y la exacerbación de síntomas psicológicos negativos, pero las diferencias en los contextos académicos influyeron en cómo vivieron la pandemia. Mientras que los estudiantes universitarios de grado enfrentaron problemas con el aislamiento y la adaptación a la educación virtual, los doctorandos, adicionalmente, tuvieron que lidiar con la interrupción de sus investigaciones doctorales, así como la incertidumbre laboral y de financiación. Además, la mayoría de los doctorandos internacionales se encontraron solos en la universidad de acogida, sin prácticamente redes de apoyo socioemocional. Así pues, la pandemia de COVID-19 actuó como un catalizador que exacerbó los problemas de salud mental existentes en estudiantes universitarios y doctorandos, revelando la necesidad urgente de implementar políticas e intervenciones psicoeducativas desde las universidades que aborden de manera integral el bienestar psicológico en la educación superior, ya que los sistemas sanitarios de salud pública no sólo estaban tensionados y desbordados por la atención a los enfermos de COVID-19 sino por la falta de recursos en la atención a la salud mental (Muro et al., 2022). En resumen, la evidencia disponible pone de manifiesto que, ante un acontecimiento vital con un enorme potencial estresogénico como una pandemia, se exacerbó las diferencias con otros grupos poblacionales con relación a una peor salud mental en los estudiantes universitarios y, muy en particular de los estudiantes de doctorado, así como se observó una tendencia al empeoramiento, cuanto menos transitorio, del malestar emocional.

### 3. Repercusiones Psicológicas Persistentes: La Salud Mental en el Contexto Post-Pandémico

La pandemia del COVID-19 marcó un punto de partida para reflexionar del abordaje de la promoción de la salud mental en contextos académicos, especialmente en la educación superior para facilitar el acceso de recursos psicoeducativos en las universidades y fomentar climas académicos más saludables (Muro-Rodríguez y Jiménez-Villamizar, 2023). La pandemia intensificó estas problemáticas en la población de jóvenes adultos en formación, introduciendo nuevos factores y desafíos para las universidades y las sociedades occidentales, como el aislamiento y la transición inesperada a la educación virtual (Alomyan, 2021; Marinoni et al, 2020; Son et al., 2020).

La pérdida de interacción cara a cara, así como las restricciones de movilidad limitaron el acceso de los jóvenes a actividades recreativas y de ocio, o de apoyo social, elementos protectores clave para la gestión de las emociones (Chaturvedi, et al., 2021; Savage et al., 2020), aumentando los niveles de estrés, agotamiento y sensación de estancamiento en su desarrollo profesional y académico, tanto en el pregrado como en el postgrado (Al Mamun et al., 2021; Muñoz-Fernández et al., 2020). Con el retorno gradual a la presencialidad, se implementaron modelos híbridos de formación, con lo cual surgieron nuevos desafíos y oportunidades para su desarrollo evolutivo y para su salud mental. Mientras que muchos estudiantes mostraron una gran capacidad de adaptación y resiliencia, otros siguen lidiando con las secuelas postpandemia. Este contexto permitió diseñar y ofrecer una mayor flexibilidad, así como un acceso ampliado a recursos digitales de aprendizaje; sin embargo, también trajo consigo desafíos significativos, como el aislamiento social, la falta de habilidades para la autogestión y, en muchos casos, una desconexión entre la vida académica y personal (Sanabria-Mazo et al., 2021). Por estos motivos, las instituciones educativas comenzaron a implementar programas de apoyo psicológico tanto para estudiantes como para docentes, con recursos psicoeducativos y campañas de promoción de bienestar a través de talleres del manejo del estrés, técnicas de *mindfulness* o apoyo entre iguales, y estrategias de reducción del estigma asociado con la búsqueda de ayuda psicológica (Alam & Mohanty, 2023; Lee et al., 2021; McGorry et al., 2022; Muro et al., 2022). Sin embargo, siguen existiendo brechas en la disponibilidad y acceso a estos servicios, así como la diferenciación según las necesidades específicas de doctorandos y estudiantes universitarios, debido a que enfrentan desafíos diferentes (Muro-Rodríguez & Jiménez-Villamizar, 2023).

Derivado de esta amenaza sanitaria sin precedentes en la historia contemporánea, se llegó a un consenso, tanto en el ámbito sanitario como en el educativo, sobre la importancia de invertir en la promoción del bienestar desde los centros educativos. Esta inversión se considera clave para

garantizar la salud mental de las poblaciones jóvenes en etapa de formación académica y profesional, fomentando entornos universitarios más saludables, motivadores e inclusivos, que impulsen culturas de solidaridad y colaboración en la educación superior. En el caso concreto de las universidades catalanas, un 71% del alumnado considera crucial que su universidad ofrezca recursos de atención psicológica, una cifra que alcanza el 75% entre el personal académico e investigador, quienes piden recursos eficaces y generalizados en los campus universitarios para facilitar el bienestar y la salud mental de toda la comunidad académica universitaria (Amador-Campos et al., 2023).

Por lo tanto, el escenario postpandemia se alzó como una oportunidad para transformar el abordaje del bienestar emocional y la salud mental en los entornos académicos, especialmente en la implementación efectiva de políticas que promuevan el bienestar integral de los estudiantes universitarios y doctorales. Las lecciones aprendidas en este periodo sentaron las bases para diseñar y mejorar sistemas educativos más coherentes con las necesidades psicoeducativas y de desarrollo de los jóvenes estudiantes en el escenario postpandemia, enfocados a psicoeducar en la regulación emocional y en la gestión, del bienestar, y del talento, con herramientas y estrategias académicas eficaces que fomenten sistemas educativos sostenibles y que garanticen el sistema de formación integral por competencias de los futuros profesionales e investigadores, cruciales para el desarrollo y avance de la sociedad.

#### 4. Referencias

- Al Mamun, F., Hosen, I., Misti, J. M., Kaggwa, M. M., & Mamun, M. A. (2021). Mental disorders of Bangladeshi students during the COVID-19 pandemic: A systematic review. *Psychology Research and Behavior Management, 14*, 645–654. <https://doi.org/10.2147/PRBM.S315961>
- Alam, A., & Mohanty, A. (2023). “Happiness engineering”: Acceptance and commitment therapy for university students' classroom engagement, mental health, and psychological flexibility. En *Interdisciplinary perspectives on sustainable development* (1.ª ed., pp. 5). CRC Press. <https://doi.org/10.1003457619>
- Alomyan, H. (2021). The impact of distance learning on the psychology and learning of university students during the COVID-19 pandemic. *International Journal of Instruction, 14*(4), 585–606. <https://doi.org/10.29333/iji.2021.14434a>
- Alves, P., Lopes, A., Cruz-Correia, R., et al. (2024). The interrupted journey: Factors and processes related to withdrawal, re-enrolment and dropout from doctoral education. *Higher Education, 88*(2), 225–242. <https://doi.org/10.1007/s10734-023-01113-w>
- Amador-Campos, J. A., Canals-Sans, J., Caparrós, B., Farriols-Hernando, N., Sanz-Ruiz, A., Cañete-Masse, C., Krieger, V., Simó, S., Rué, M., Pérez, A., & Espitia, C. (2023). *Estudi sobre la salut mental en el sistema universitari de Catalunya: Informe de resultats de l'estudiantat, del personal tècnic de gestió i d'administració i serveis (PTGAS) i del personal docent i investigador (PDI)*. Consell Interuniversitari de Catalunya, Departament de Recerca i Universitats, Generalitat de Catalunya. <https://hdl.handle.net/20.500.14344/461>
- American College Health Association. (2019). *American College Health Association-National College Health Assessment II: Reference group executive summary spring 2019*. Silver Spring, MD: American College Health Association. [https://www.acha.org/documents/ncha/NCHAII\\_SPRING\\_2019\\_US\\_REFERENCE\\_GROUP\\_EXECUTIVE\\_SUMMARY.pdf](https://www.acha.org/documents/ncha/NCHAII_SPRING_2019_US_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf)
- Byrom, N. (2020). Los desafíos del confinamiento para los investigadores en el inicio de su carrera. *eLife, 9*, 1–3. <https://doi.org/10.7554/eLife.59634>
- Cahill, B., Schroijsen, M., & Mol, S.T. (2023). *Towards the creation of healthier academic environments in the European Research Area: mental health and well-being among early-stage researchers*. In A. Muro & M. Jiménez-Villamizar (Eds.), *The Third Half: Toward the Creation of Healthier Research Careers* (pp. 11-14). Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10005921>

- Campbell, F., Blank, L., Cantrell, A., et al. (2022). Factors that influence mental health of university and college students in the UK: A systematic review. *BMC Public Health*, 22, 1778.  
<https://doi.org/10.1186/s12889-022-13943-x>
- CEPAL & UNESCO. (2020). *La educación en tiempos de la pandemia de COVID-19*. UNESCO.  
<https://www.cepal.org/es/publicaciones/45905-la-educacion-tiempos-la-pandemia-covid-19>
- Charles, S., Karnaze, M. & Leslie, F. (2021). Positive factors related to graduate student mental health. *Journal of American College Health*, 70(6), 1858-1866.  
<https://doi.org/10.1080/07448481.2020.1841207>
- Chaturvedi, K., Vishwakarma, D. K., & Singh, N. (2021). COVID-19 and its impact on education, social life and mental health of students: A survey. *Children and Youth Services Review*, 121, Article 105866. <https://doi.org/10.1016/j.childyouth.2020.105866>
- Estupiñá, F. J., Santalla, Á., Prieto-Vila, M., Sanz, A., & Larroy, C. (2024). Mental health in doctoral students: Individual, academic, and organizational predictors. *Psicothema*, 36(2), 123-132. <https://doi.org/10.7334/psicothema2023.156>
- Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology*, 36(3), 282–284.  
<https://doi.org/10.1038/nbt.4089>
- Hasgall, A., Saenen, B., & Borrell-Damian, L. (2019). *Doctoral education in Europe today: Approaches and institutional structures*. [Gent, Bélgica]: European University Association.  
<https://biblio.ugent.be/publication/8623363/file/8623366>
- Jiménez-Villamizar, M., Tejada-Gallardo, C., Becerra-Rojas, A., Devoto-Araya, M., Fernández-García, M., López-García, R., Bonilla, I., Tadić Vujčić, M., Mol, S. T., Sanz-Ruiz, A., & Muro-Rodríguez, A. (2024). The Third Half: A positive psychoeducational program to promote well-being and mental health among early career researchers. *Psychology, Society & Education*, 16(3). <https://doi.org/10.21071/pse.v16i3.17180>
- Jiménez-Villamizar, M., Comendador-Vazquez, L., Sanabria-Mazo, J., Mateo-Canedo, C., Losilla, J., Muro, A., & Sanz, A. (2025). Mental health in the short- and long-term adaptation processes of university students during the COVID-19 pandemic: A systematic review and meta-analysis [Preprint]. *MedRxiv*. <https://doi.org/10.1101/2025.03.14.25323978>
- Jiménez-Villamizar, M., Muro, A., Navarro, J. B., Carmona, M., Cladellas, R., Feliu-Soler, A., et al. (2023). Predictive factors of the psychological impact of the COVID-19 pandemic on university students in six Ibero-American countries. *Ansiedad y Estrés*, 29(3), 153-162.  
<https://doi.org/10.5093/anyes2023a19>

- Kismihók, G., McCashin, D., Mol, S. T., & Cahill, B. (2022). The well-being and mental health of doctoral candidates. *European Journal of Education*, 57(4), 410–423.  
<https://doi.org/10.1111/ejed.12519>
- Kotsyubinsky, A. P., & Kotsyubinsky, D. A. (2023). Biological Reductionism as an Obstacle to the Advancement of the Biopsychosocial Concept of Mental Disorders. *Consortium Psychiatricum*, 4(4), 75–84. <https://doi.org/10.17816/CP15476>
- Larivière, V. (2012). On the shoulders of students? The contribution of PhD students to the advancement of knowledge. *Scientometrics*, 90(2), 463–481. <https://doi.org/10.1007/s11192-011-0495-6>
- Lee, J., Jeong, H. J., & Kim, S. (2021). Stress, Anxiety, and Depression Among Undergraduate Students during the COVID-19 Pandemic and their Use of Mental Health Services. *Innovations in Higher Education*, 46(5), 519–538. <https://doi.org/10.1007/s10755-021-09552-y>
- Lisnyj, K., Pearl, D. L., McWhirter, J. E., & Papadopoulos, A. (2022). Examining the influence of human and psychological capital variables on post-secondary students' academic stress. *Studies in Higher Education*, 47(12), 2508–2522.  
<https://doi.org/10.1080/03075079.2022.2083101>
- Marinoni, G., Van't Land, H., & Jensen, T. (2020). *The impact of COVID-19 on higher education around the world: IAU global survey report*. International Association of Universities.  
[https://www.iau-aiu.net/IMG/pdf/iau\\_covid19\\_and\\_he\\_survey\\_report\\_final\\_may\\_2020.pdf](https://www.iau-aiu.net/IMG/pdf/iau_covid19_and_he_survey_report_final_may_2020.pdf)
- McGorry, P. D., Mei, C., Chanen, A., Hodges, C., Alvarez-Jimenez, M., & Killackey, E. (2022). Designing and scaling up integrated youth mental health care. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA)*, 21(1), 61–76.  
<https://doi.org/10.1002/wps.20938>
- Mendes, T., y Pérez, A. (2021). Symptoms of depression, anxiety, stress and associated factors in Brazilian medicine students: an integrative review [Síntomas de depresión, ansiedad, estrés y factores asociados en estudiantes brasileños de medicina: una revisión integradora]. *Research, Society and Development*. 10(4). <https://doi.org/10.33448/rsd-v10i4.14033>
- Muñoz-Fernández, S. I., Molina-Valdespino, D., Ochoa-Palacios, R., Sánchez-Guerrero, O., & Esquivel-Acevedo, J. A. (2020). Estrés, respuestas emocionales, factores de riesgo, psicopatología y manejo del personal de salud durante la pandemia por COVID-19. *Acta Pediátrica de México*, 41(4S1), S127–S136.  
<https://ojs.actapediatrica.org.mx/index.php/APM/article/view/2104>

- Muro, A., Bonilla, I., Tejada-Gallardo, C., Jiménez-Villamizar, M. P., Cladellas, R., Sanz, A., & Torregrossa, M. (2022). The Third Half: A Pilot Study Using Evidence-Based Psychological Strategies to Promote Well-Being among Doctoral Students. *International Journal of Environmental Research and Public Health*, *19*(24), 16905. <https://doi.org/10.3390/ijerph192416905>
- Muro, A., Soler, J., Cebolla, À., & Cladellas, R. (2018). A positive psychological intervention for failing students: Does it improve academic achievement and motivation? A pilot study. *Learning and Motivation*, *63*, 126–132. <https://doi.org/10.1016/j.lmot.2018.04.002>
- Muro-Rodríguez, A., & Jiménez-Villamizar, M. (2023). *The Third Half: Toward the Creation of Healthier Research Careers*. En *The Third Half: Toward the Creation of Healthier Research Careers*. Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10004671>
- Naumann, S., Matyjek, M., Bögl, K., et al. (2022). Doctoral researchers' mental health and PhD training satisfaction during the German COVID-19 lockdown: Results from an international research sample. *Scientific Reports*, *12*, 22176. <https://doi.org/10.1038/s41598-022-26601-4>
- Rincón, D. (2019). Competencias psicosociales en estudiantes universitarios. *Revista Boliviana de Educación*, *1*(1), 28-38. <https://portal.amelica.org/ameli/journal/742/7423706002/html/>
- Ross, P., Scanes, E., & Locke, W. (2024). Stress adaptation and resilience of academics in higher education. *Asia Pacific Education Review*, *25*(4), 829–849. <https://doi.org/10.1007/s12564-023-09829-0>
- Sanabria-Mazo, J. P., Useche-Aldana, B., Ochoa, P. P., Rojas-Gualdrón, D. F., Mateo-Canedo, C., Carmona-Cervelló, M., et al. (2021). Social inequities in the impact of COVID-19 lockdown measures on the mental health of a large sample of the Colombian population (PSY-COVID study). *Journal of Clinical Medicine*, *10*(22), 5297. <https://doi.org/10.3390/jcm10225297>
- Satinsky, E. N., Kimura, T., Kiang, M. V., Abebe, R., Cunningham, S., Lee, H., Lin, X., Liu, C. H., Rudan, I., Sen, S., Tomlinson, M., Yaver, M., & Tsai, A. C. (2021). Systematic review and meta-analysis of depression, anxiety, and suicidal ideation among Ph.D. students. *Scientific Reports*, *11*, 14370. <https://doi.org/10.1038/s41598-021-93687-7>
- Savage, M. J., James, R., Magistro, D., Donaldson, J., Healy, L. C., Nevill, M., & Hennis, P. J. (2020). Mental health and movement behaviour during the COVID-19 pandemic in UK university students: Prospective cohort study. *Mental Health and Physical Activity*, *19*, 100357. <https://doi.org/10.1016/j.mhpa.2020.100357>
- Shim, Y., Eaker, R., & Park, J. (2022). Mental Health Education, Awareness and Stigma regarding Mental Illness among College Students. *Journal of Mental Health and Clinical Psychology*, *6*(2), 6-15. <https://doi.org/10.29245/2578-2959/2022/2.1258>

- Sinval, J., Oliveira, P., Novais, F., Almeida, C. M., & Telles-Correia, D. (2025). Exploring the impact of depression, anxiety, stress, academic engagement, and dropout intention on medical students' academic performance: A prospective study. *Journal of Affective Disorders*, 368, 665–673. <https://doi.org/10.1016/j.jad.2024.09.116>
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), e21279. <https://doi.org/10.2196/21279>
- Sverdlik, A., Hall, N. C., McAlpine, L., & Hubbard, K. (2018). The PhD experience: A review of the factors influencing doctoral students' completion, achievement, and well-being. *International Journal of Doctoral Studies*, 13, 361–388. <https://doi.org/10.28945/4113>
- United Nations. (2021, October 8). *With the pandemic, the urgency to attend to mental health and the lack of services to do so emerges [Con la pandemia, aflora la urgencia de atender la salud mental y la falta de servicios para hacerlo]*. News ONU. <https://news.un.org/es/story/2021/10/1498052>
- United Nations. (2023). *The 17 goals: Sustainable development*. United Nations. <https://sdgs.un.org/goals>
- Woolston, C. (2019). PhD poll reveals fear and joy, contentment and anguish. *Nature*, 575 (7782), 403-406. <https://doi.org/10.1038/d41586-019-03459-7>
- World Health Organization. (2022). *Mental Health: Strengthening Our Response*. <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-res>

## **Capítulo 2. Objetivos**

## OBJETIVOS

El objetivo general de esta tesis doctoral fue doble: 1- Examinar el impacto psicológico de la pandemia de COVID-19 en estudiantes universitarios y de doctorado en contextos socioculturales diversos, analizando factores individuales y diferencias transculturales y 2- Diseñar, implementar y analizar la eficacia de estrategias psicoeducativas para promover el bienestar y mitigar el malestar emocional en las universidades. Para cumplir esto, se establecieron los siguientes objetivos específicos para cada estudio:

### **Objetivo 1 (Artículo 1):**

- Identificar la prevalencia de ansiedad, depresión y el distrés en los procesos de afrontamiento a corto y largo plazo de los estudiantes universitarios de todo el mundo durante la pandemia de COVID-19.

### **Objetivo 2 (Artículo 2):**

- Analizar cómo los factores socioculturales y las diferencias individuales contribuyeron a explicar el impacto psicológico de la pandemia entre estudiantes universitarios iberoamericanos de Argentina, Colombia, Ecuador, España, México y Uruguay.

### **Objetivo 3 (Artículo 3):**

- Replicar, implementar y evaluar la efectividad de *The Third Half*, un programa psicoeducativo multicomponente en estudiantes de doctorado para mejorar sus niveles de bienestar y salud mental en el escenario postpandemia.

### **Objetivo 4 (Artículo 4):**

- Contrastar perfiles y características diferenciales de doctorandos mexicanos y españoles, en varios indicadores sociodemográficos y de salud mental.

## **Capítulo 3. Publicaciones**

## Publicaciones

En total, 4 estudios reflejados en 4 artículos componen esta tesis doctoral; tres están publicados en revistas indexadas con factor de impacto y uno en proceso de evaluación y revisión para su publicación.

Como se detallará en el apartado de resultados y discusión, esta tesis doctoral no solo presenta una evidente afinidad temática entre los cuatro estudios que la componen, sino que sigue un hilo conductor que refleja un proceso investigativo progresivo, coherente y articulado. Cada estudio surge como una respuesta a las preguntas abiertas y hallazgos del anterior, conformando así una secuencia lógica de exploración científica. **El estudio 1**, una revisión sistemática con metaanálisis, permitió corroborar la elevada prevalencia de sintomatología de distrés psicológico en la población universitaria a nivel global durante la pandemia por COVID-19. Sin embargo, la amplia heterogeneidad entre las prevalencias reportadas puso de manifiesto la necesidad de examinar en profundidad los factores de riesgo específicos que podrían estar incidiendo en dicha variabilidad.

En este contexto, se diseñó el **Estudio 2**, de carácter observacional, utilizando la base de datos generada por el Grupo de Investigación en Estrés y Salud en el marco del proyecto PSY-COVID. Este estudio no solo validó las prevalencias observadas en la revisión, sino que permitió identificar distintos marcadores de riesgo asociados al malestar emocional en estudiantes universitarios. Estos hallazgos sentaron las bases para el diseño del **Estudio 3**, un ensayo de intervención orientado a evaluar la efectividad de un programa de bienestar emocional dirigido a estudiantes de doctorado en una universidad europea. La selección de esta población respondió, por un lado, a la evidencia emergente sobre su elevada vulnerabilidad psicosocial, y por otro, a la necesidad de generar evidencia sobre estrategias preventivas y terapéuticas aplicables en contextos académicos de alta exigencia.

Tras comprobarse en este estudio una mejora significativa en los indicadores del espectro malestar-bienestar emocional, se planteó la pertinencia de extender y contrastar estos hallazgos en contextos socioculturales diversos. Así nació el **Estudio 4**, de naturaleza observacional y transcultural, que comparó la salud mental y los factores de riesgo en estudiantes de doctorado españoles y mexicanos, en el marco de una estancia de investigación internacional. Este último estudio no solo completa el ciclo investigativo iniciado con la revisión sistemática, sino que introduce un enfoque comparativo que permite considerar la influencia de variables contextuales en el bienestar de los doctorandos.

De este modo, la tesis avanza desde una visión general de la problemática hasta un abordaje específico e intercultural, siguiendo un enfoque hipotético-deductivo y metodológicamente plural. Tal y como se indicará posteriormente, esta progresión refleja no solo la solidez del diseño

investigativo, sino también la capacidad de adaptación y la formación integral en distintos enfoques y técnicas de investigación psicológica

En resumen, en el **artículo 1** (revisión de la literatura) se presentó una revisión sistemática y metaanálisis sobre las prevalencias de ansiedad, depresión y distrés en los procesos de afrontamiento a corto y largo plazo de estudiantes universitarios durante la pandemia; en el **Artículo 2** (estudio empírico) se realizó un análisis de los factores socioculturales y diferencias individuales en el impacto psicológico de la pandemia en universitarios; en el **Artículo 3** (estudio cuasi-experimental) se estudió el impacto de un programa psicoeducativo en el bienestar y la salud mental de doctorandos llamado “El Tercer Tiempo (*The Third Half*); y finalmente, en el **Artículo 4** (estudio observacional transcultural), se presentan los resultados sobre el perfil diferencial de doctorandos mexicanos y españoles, tanto a nivel sociodemográfico, como en varios indicadores de bienestar emocional. Estos 4 artículos se presentan a continuación.

**1. Artículo 1 (en proceso de revisión y publicación):**

Jiménez-Villamizar, M., Comendador-Vazquez, L., Sanabria-Mazo, J., Mateo-Canedo, C., Losilla, J., Muro, A., & Sanz, A. (2025). Mental health in the short- and long-term adaptation processes of university students during the COVID-19 pandemic: A systematic review and meta-analysis [Preprint]. *MedRxiv*. <https://doi.org/10.1101/2025.03.14.25323978>

## **Mental health in the short- and long-term adaptation processes of university students during the COVID-19 pandemic: A systematic review and meta-analysis**

María Paola Jiménez-Villamizar<sup>1</sup>, Laura Comendador Vázquez<sup>2,3</sup>, Juan P Sanabria-Mazo<sup>4,5</sup>, Corel Mateo<sup>1,6</sup>, Josep María Losilla<sup>7</sup>, Anna Muro<sup>1,6</sup>, Antoni Sanz<sup>1,6</sup>

### **Affiliations**

<sup>1</sup> Department of Basic, Developmental and Educational Psychology. Autonomous University of Barcelona, Spain.

<sup>2</sup> Department of Psychiatry and Legal Medicine, Faculty of Medicine, Autonomous University of Barcelona, Spain.

<sup>3</sup> Department of Mental Health, University Hospital Parc Taulí. Institut d'Investigació i Innovació Parc Taulí (I3PT-CERCA). Universitat Autònoma de Barcelona. 08208 Sabadell, Spain

<sup>4</sup> Teaching, Research & Innovation Unit, Parc Sanitari Sant Joan de Déu. 08830 Sant Boi de Llobregat, Spain.

<sup>5</sup> Centre for Biomedical Research in Epidemiology and Public Health (CIBERESP). 28029 Madrid, Spain

<sup>6</sup> Stress and Health Research Group (GIES), Autonomous University of Barcelona, Spain

<sup>7</sup> Department of Psychobiology and Methodology of Health Sciences.

### **Corresponding author**

Carrer de la Fortuna, s/n, 08193 – Campus de Bellaterra, Cerdanyola del Vallès, Spain

+34 935 813 136 /

Email: antonio.sanz@uab.cat

### **Funding**

This research has been funded by the Agency for Management of University and Research Grants (AGAUR; Autonomous Government of Catalonia) with reference code 2020PANDE00025.

### **Conflicts of interest**

The author declares no conflict of interest. The manuscript is approved by all authors for publication.

### **Data availability**

Data are available at:

[https://figshare.com/articles/dataset/Dataset\\_Mental\\_health\\_and\\_individual\\_differences\\_in\\_the\\_short\\_and\\_long-term\\_adaptation\\_processes\\_of\\_university\\_students\\_during\\_the\\_COVID-19\\_pandemic/21701228](https://figshare.com/articles/dataset/Dataset_Mental_health_and_individual_differences_in_the_short_and_long-term_adaptation_processes_of_university_students_during_the_COVID-19_pandemic/21701228)

### **Authors' contribution statement**

**MPJV:** study conceptualization, study design, meta-analysis data collection, data interpretation, writing: original draft, reviewing and editing. **JML:** study design, data analysis, writing: original draft, reviewing and editing. **LCV:** meta-analysis data collection, writing: review. **JPS:** writing: review. **CM:** writing: review. **AMR:** supervision, study design, writing: review and editing. **AS:** supervision, study design, writing: reviewing and editing. All authors contributed to and approved the final manuscript.

### **PATIENT AND PUBLIC INVOLVEMENT**

Patients and/or the public were not involved in the design, conduct, reporting, or dissemination plans of this research.

**NOTE:** This preprint reports new research that has not been certified by peer review and should not be used to guide clinical practice.

## **PATIENT CONSENT FOR PUBLICATION**

Not applicable.

## **AI USE**

Google Translate was used to check (and modify where necessary) the linguistic quality and suitability of the manuscript. No other AI tools were used in either the study or the writing of the manuscript.

## Mental health in the short- and long-term adaptation processes of university students during the COVID-19 pandemic: A systematic review and meta-analysis

### Abstract

**Introduction:** During Covid-19, high prevalence of distress was reported among students, suggesting that they may be at higher risk than the general population of developing psychological disorders in confinement situations. **Methods:** We conducted a systematic search of four databases (PsycINFO, PubMed, SCOPUS, and Web of Science) for articles published from January 2020 to May 2022. Risk of bias was assessed using the Joanna Briggs Institute (JBI) checklist. Random effects meta-analyses of the reported proportions of college students with clinically significant symptoms of anxiety, depression and stress were carried out, and between-studies heterogeneity was also analysed. **Results:** 73 studies (N=209.761) were included for meta-analysis. The estimated proportion of college students with clinically significant short-term symptoms was 34% for anxiety (95% CI [29%,39%];  $I^2=99.75\%$ ), 38% for depression (95% CI [33%,44%];  $I^2=99.71\%$ ), and 54% for stress (95% CI [46%,62%];  $I^2=99.57\%$ ). The estimated proportion of college students with clinically significant long-term symptoms was 37% for anxiety (95% CI [32%,42%];  $I^2=97.92\%$ ), 31% for depression (95% CI [23%,41%];  $I^2=99.49\%$ ) and 41% for stress (95% CI [25%,59%];  $I^2=99.29\%$ ) were found. Several methodological and sociodemographic moderators accounted for heterogeneity in the observed prevalences. **Limitations:** The heterogeneity of study findings suggest that the results should be interpreted with caution. **Conclusion:** The current evidence shows that approximately one-third of college students experienced distress, further where we can infer that there was no evidence of a worsening in mental health derived from a cumulative effect during the pandemic.

PROSPERO: CRD420222233036.

**Keywords:** COVID-19; University students; Anxiety; Depression; Stress; Meta-analysis

### 1. Introduction

Pandemic situations, especially the exponential increase in cases of infection and death, generate fear of disease and uncertainty. This context meant that the vast majority of the population had to face stressful situations not previously experienced. During the COVID-19 public health emergency declared by WHO in 2020, the most of countries abruptly implemented a range of measures to mitigate the spread of the virus, as social distancing, isolation, and mobility restrictions, with complete closures and quarantines, which have forced citizens to stay at home for months (1,2). One of the sectors most affected by these sudden changes has been the educational sector, forcing institutions, universities, and schools to close their doors and rearrange their learning processes with online methods that deeply affected the daily routines of students and staff (3). The mental and emotional well-being of the younger student population may be altered in those countries that have been most affected by the pandemic. It is well known that prior to the COVID-19 crisis there were already economic and occupational concerns that were reflected in increased distress and mental health problems among university students (4), and the pandemic could have acted as a life event with the potentiality to increase the prevalence of mood disorders, aggravating a problem of progressive deterioration in the mental health of the younger generations, which had started previously (5).

Since 2020, many studies have been conducted in different countries on the psychological impact of the pandemic, most of them pointing to the enhanced vulnerability of younger populations (5,6). Among them, university students were affected by additional risk factors with the potential to increase the incidence of mental health problems, such as the difficulty

and uncertainty related to the development of academic activities, the demands due to forced migration to online teaching and the new pedagogical dynamics (7). Literature reviews in university students report anxiety prevalence of 36%, depression of 39% (8), and stress between 28% and 70% (9). This purportedly confirms that the pandemic supposed the increase of negative emotions and psychological problems in this population group. The results of the present study seek to update the situation of the impact on mental health in university students in the face of COVID-19 collecting large-scale evidence on the distress of university students in two moments in front of an acute response that will be associated with the first wave of pandemic, while the second is associated with a time of evaluation of approximately second semester after the first wave (10). Distress is understood as chronic and prolonged emotional manifestations of discomfort, affecting adaptive capacity, and predisposing to the appearance of possible mental health problems (11). One of the studies found that less than half of the students in their sample were able to cope with this level of stress, while a significant proportion of students also reported having depressive thoughts (12), proposed reasons for influencing depressive symptoms include loneliness caused by social isolation and estrangement, power, financial uncertainty as major life reinforcers. Therefore, it is hypothesized that COVID-19 would have adverse effects on the mental health of students, the prevalence of these mental health problems will be higher in the acute phase than in the chronic phase would be affected by nations, gender and data collection period. Due to the heterogeneity in the results on changes in distress throughout the pandemic, systematization of the available literature seems to be necessary to understand the impact of COVID-19 on the mental health of college students. This systematic meta-analysis aimed to identify the prevalence of anxiety, depression, and stress in the short- and long-term coping processes of college students from a longitudinal perspective during the COVID-19 pandemic.

Review studies are needed to better describe and understand the psychological experience of university students and to facilitate health and educational policies to help this community cope with COVID-19 disruptions to their mental health and academic trajectory. Therefore, it is essential to study and review the current experience of students worldwide, the risk and protective factors, and the additional mental health costs of pandemic blockages, not only for the promotion of student mental health, but also for the design of systemic prevention and intervention programs in academic institutions (13,14).

## **Current Study**

The severity of distress symptoms such as depression and anxiety, as well as stress, has been reported in many studies on the psychological effects of the pandemic in university students, although they vary in the prevalence of intensity, being this group a priority focus of study due to the prevalences reported before and during the pandemic. No meta-analyses have been reported that inquire about the short-term and long-term evolution of mental health in college students during the COVID-19 pandemic. To address this gap, the aim of the present meta-analysis was to describe the short-term and long-term prevalence of depressive symptomatology, anxiety manifestations, and stress in college students during the COVID-19 pandemic.

The first objective was to identify and quantify indicators of distress according to the short-term adaptation process spanning from January 2020 to June 2020 (period 1) and long-term spanning from July 2020 to May 2022 (period 2). It should be noted that not all studies included in the current meta-analysis measured aspects of distress, therefore, all selected studies included (a) results of prevalences of depression, anxiety, or stress (b) date of data collection. As a secondary objective, moderation analyses were also applied to explore the effects of pandemic indicators (i.e., wave, confinement, severity), geographic location, and assessment instruments used. Such analyses were used to investigate sources of heterogeneity, which cannot be extracted from the pooled treatment effect estimate. Overall, the present study sought to assess the effects of short- and long-term prevalence of depressive

symptomatology, manifestations of anxiety and stress in college students during the COVID-19 pandemic to establish recommendations for decision making on the implementation of effective programs and measures to promote a healthier college environment conducive to students' intellectual and emotional growth.

## **2. Methods**

### **2.1. Protocol and registration**

The protocol was prepared in accordance with the Preferred Reporting Items for Protocols for Systematic Review and Meta-Analysis (PRISMA-P) (15,16). A version of the protocol was registered in the Prospective International Registry of Systematic Reviews (PROSPERO), with identification number CRD42022330361. This study was based on data collected from publicly available databases and did not require ethical approval from our institutional review boards.

### **2.2. Document search and selection**

The literature search strategy was conducted in four electronic databases: PubMed (US National Library of Medicine), through the National Center for Biotechnology Information (NCBI), PsycInfo (American Psychological Association), through ProQuest, Scopus (Elsevier) and Web of Science Core Collection (Thomson Reuters) until June 26, 2022.

Empirical cross-sectional or longitudinal studies reporting the prevalence of depression-anxiety-stress in college students and/or examining through quantitative measures their associations with risk and protective factors were included in the review. Qualitative studies, individual case studies or case series, psychometric studies focused on instrument development or validation, opinion reports, and systematic reviews were excluded. For this purpose, it was essential to carry out a temporal delimitation between January 2020 and May 2022, and only articles in English and Spanish were reviewed. The search strategy was performed using the following PubMed search formula, modified according to the specific syntax of each of the bibliographic databases consulted (See Table S1).

In addition, we searched for literature included in the references, which was related to the topic and included in systematic reviews to complement, obtain relevant literature and ensure the retrieval ratio.

### **2.3. Eligibility criteria**

Cross-sectional or longitudinal empirical studies that reported prevalence or mean mental health scores in college students were included in the review. Qualitative studies, single case studies or case series, psychometric studies focused on instrument validation, opinion reports, and systematic reviews were excluded. The PICOS- Population, Intervention, Comparison, Comparison, Outcome, or Outcome approach was followed to select eligibility criteria (17).

Inclusion criteria:

\*Studies that report the prevalence of depression, anxiety or stress determined using a validated scale. The mean severity score of symptoms of depression, anxiety, or stress and its standard deviation among college students.

\*Data collected during COVID-19, defined by the date of data collection taking into account two periods, one of short-term adaptation (data collected in the first waves of COVID-19 between January and June 2020), and another long-term (data collected from July 2020 to April 2022), taking into account the area or country where the study was conducted, this allowed to identify the temporal behaviour of the different waves of COVID (first, second or third wave). It is important to clarify that the pandemic wave consists of the growth of the number of sick people and ends with their decrease.

Exclusion criteria:

\*Studies where data were collected prior to the onset of the COVID-19 pandemic were excluded.

\*Studies where the population is from schools, primary and secondary educational institutions, or technicians.

#### **2.4. Data management and study selection**

In the first stage, the results of the review of all the databases were exported to Mendeley, where the software automatically eliminated duplicate articles in the databases, and then the first reviewer (MPJ) performed a manual review confirming the information. The second phase was performed through Rayyan (18) with a first screening from the title and abstract of the articles by two independent investigators (MPJ and LC). The initial inter-rater reliability Cohen's kappa (19) was  $k = .92$ . In the third phase, the reviewers exported the selected references in Rayyan QCRI to a format developed by the team and proceeded to review the full texts to verify study eligibility. Finally, selected full text data, risk of bias (RoB) and methodological quality of included studies were extracted by the reviewers and key information was entered into a standardized database.

#### **2.5. Data extraction and coding**

Data extraction was performed independently by two authors (MPJ and LC), using a standard extraction form developed in a Microsoft Excel spreadsheet. Discrepancies were resolved by consensus and the participation of a third reviewer was not required.

Data were extracted from the following categories: (a) article identification data (title, author, and year of publication); (b) sample characteristics (date of data collection, sample size, geographic location); (c) study measures (anxiety, depression and/or stress; Methodological (instruments, reliability, mode of administration) and outcomes (mean, SD, prevalence, moderator variables).

For the analysis of the systematic review, we considered: (a) study identification data; (b) pandemic effects (COVID wave, isolation, pandemic severity); (c) sample characteristics (date of data collection, sample size, geographic location, percentage of women); (d) measures of anxiety, depression, and stress studies by period (number of subjects affected).

#### **2.6. Risk of bias assessment**

Risk of bias assessment was performed independently by two reviewers (MPJ and LC), using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Studies Reporting Prevalence Data (20). Discrepancies were resolved by consensus and the involvement of a third reviewer was not necessary.

The JBI checklist for prevalence studies evaluates nine domains, in this case an adjustment was made where seven domains were evaluated: (1) adequacy of the sample frame, (2) sampling of participants, (3) description of participants and setting, (4) coverage of data analysis, (5) diagnostic methods, (6) reliability and standardization of measurements, and (7) response rate management. The reviewers rated each study using the options "yes," "no," and "unclear," which were taken as "low," "high," and "unclear" risk of bias, respectively. The option "not applicable" was also available for each statement, each option had a score 1=yes, 0=no, 9=unclear. For the total score, the number of affirmative responses was summed, where more affirmative responses denoted lower risk of bias. The final quality score for each study was summed and classified as low (0 to 2 points), medium (3 to 4 points), or high (5 to 7 points; see Table S4). The first two authors independently performed the quality review of the included studies and agreed on a common score for each.

## **2.7. Data analyses**

A descriptive summary and explanation of the characteristics and findings of all included studies were displayed in a comprehensive table.

Random effects meta-analyses of the reported proportions of college students with clinically significant symptoms of anxiety, depression and stress were carried out, and the mean prevalences with associated 95% confidence intervals (CI) were calculated. The three outcomes were analysed in two time periods: short-term adaptation (data collected in the first waves of Covid-19 between January and June 2020) and long-term (data collected from July 2020 to April 2022).  $Q$  and  $Tau^2$  statistics were computed to assess the statistical heterogeneity of effect sizes. Between-studies heterogeneity was also examined using the  $Q$  statistic, comparing the groups defined by the level of risk of bias, Covid wave, severity of confinement, geographical location, and measurement instrument used (1).

All analyses were carried out with the Stata statistical package (version SE 18) [Ref].

## **3. Results**

### **3.1. Selection and inclusion of studies**

The initial database search yielded a total of 1265 articles (see Figure 1). In the first phase after eliminating duplicates, 424 titles and abstracts were reviewed, of which 111 were selected for full-text evaluation with an inter-rater reliability of 92%. In the second phase after full-text screening, 23 studies were excluded with an inter-rater reliability of 91%, ten had objectives different from the review, five were non-empirical studies, two had data before COVID-19 and six do not include the target population. Finally, 90 studies were included in this systematic review, of which 74 reported sufficient data for meta-analysis.

*Please, insert Figure 1 here.*

### **3.2. Characteristics of the included studies**

Of the 90 articles included in the review, 261,681 university students from 48 countries participated, most of the studies were conducted in China (11.4%); 65% of the participating population were women. Of note was a cross-national study that included 9 different nationalities (21). The age of the participants ranged from 18 to 78 years. Most studies (a total of 68) collected data in the first half of 2020 (January 1 to June 30, 2020; Supplementary Table S3).

### **3.3. Risk of bias of the selected studies**

Table S4 shows the final quality assessment rates for each study. Following the JBI checklist for prevalence, 68 studies had scores of six and five, considering these studies as low risk of bias, 26 studies scored four, representing some concerns, and 1 study scored two (94), representing high risk of bias. The domain of sampling frame adequacy showed the lowest quality scores, followed by response rate management. This means that the included studies (1) did not adequately address the target population, presumably because they included unrepresentative samples or did not provide insight into the broader characteristics of the population, and (2) did not discuss information on how response rates were managed.

### **3.4. General outcomes (narrative and meta-analytic)**

A total of 73 studies measured anxiety in 209,761 undergraduates; the most used instrument to measure anxiety was the GAD-7 (38 studies) and variants of the DASS (18 studies). All these studies were based on data collected through online surveys (100%). In relation to depression, 62 studies measured clinically significant symptoms during the past 15 days by means of variants of the PHQ (41 studies). Likewise, 36 studies measured stress, the most used questionnaire was the PSS in its different versions (21 studies). The DASS was the most used instrument in those studies that jointly assessed anxiety, depression, and stress (14 studies; see Table S3).

#### *Mental health in short-term adaptation processes of university students during the COVID-19 pandemic.*

Short-term adaptation was assessed in the present study in the time interval from January to June 2020, coinciding with the first wave of the pandemic in all countries analysed [include reference to statistical source, e.g. the world in data] In total, 45 studies reported the prevalence of anxiety (22-66) among a total of 82,490 university students (Fig. 2; range, 1-93%), for depression a total of 35 studies reported prevalence (23-25,27,30,32,36-38,41-44,46-48,50,52-55,57,59,61-63,67-75) for a total of 61,318 college students (Fig. 3; range, 9-72%) and for stress 18 studies reported prevalence (23,24,30,38,42-44,46,47,50,50,54,55,57-59,61,76,77) for a total of 67,838 university students (Fig. 4; range, 22-87%). Regarding the use of assessment instruments for anxiety symptoms the GAD (27 studies) and variants of the SAS (12 studies) were the most used, for depression the most used scale was PHQ in all its variants (30 studies) and for stress the PSS in all its variants was the most used (15 studies), all studies assessed clinically significant symptoms over time, after one or two weeks, up to one month. One of these studies reported findings based on data from different months during this first survey period (63) but due to the overlap of survey months reported in the articles, these data were pooled. 100% of the articles were based on data collected online; this is applicable for all three variables studied. Regarding geographic location for both anxiety and depression the countries with the largest studies were China and Bangladesh, while for stress most of the data were collected in German population.

The estimated proportion of university students assessed with clinically significant symptoms of anxiety was 34% (95% confidence interval [CI] 29%-39%) with evidence of heterogeneity between studies ( $I^2 = 99.75\%$ ), the prevalence of depression was 38% (95% confidence interval [CI] 33%-44%) with evidence of heterogeneity between studies ( $I^2 = 99.71\%$ ); likewise, the prevalence for stress was 54% (95% confidence interval [CI] 46%-62%) with evidence of heterogeneity across studies ( $I^2 = 99.57\%$ ).

Heterogeneity tests showed that the effect values in each study were very heterogeneous and that there may have been significant regulatory variables. Therefore, a subgroup test was applied to explore sources of heterogeneity and regulation of effect size research characteristics, moderation analysis indicated that for anxiety and depression symptoms the severity of the pandemic, geographic location and measurement instrument were related, while for stress the COVID wave, geographic location and measurement instrument were moderators (Table 2). In the subgroup analysis, the highest prevalence was observed during the first wave of anxiety (95% CI 29%-38%) and stress (95% CI 45%-66%), the second wave of depression (95% CI 38%- 48%), the highest levels of anxiety, depression and stress were observed in Portugal (65%), Bangladesh (64%) and United States - United Kingdom (84%), respectively. Studies using the STAI (n=1) and SAI (n=1) anxiety scales reported the highest pooled prevalence: 48% (95% CI: 48%-49%) and 47% (95% CI: 43%-50%), while studies using CAS (n=1) and HADS (n=3) reported the lowest pooled prevalence of anxiety of 15% (95% CI: 12%-19%), 23% (95% CI: 16%-33%) respectively, for depression, CES-D reported

the highest prevalences of 72% (95% CI: 69%-75%) (Table S6). For stress, the PSS (either full or short version; n = 15) reported prevalences of 63 % (95 % CI: 53 %-72 %) (Table S5).

#### *Mental health in long-term adjustment process of university students during the COVID-19 pandemic*

For the second period corresponding to a long-term adaptation process, which runs from July 2020 to April 2022. A total of 14 studies were found that reported prevalences of anxiety (53,63,78-90), with a total of 8966 university students with clinically significant symptoms (Fig. 2; range 22%-64%). For that same time interval for depression a total of 9854 subjects reported clinically significant symptoms, corresponding to a total of 14 studies (Fig. 3; range 7%-73%) (53,61,63,79,79,82,84-92), for its part stress reported a total of 2245 university students with symptoms from 8 studies (Fig. 4; range 16%-84%) (63,81,82,84,86,87,89,93). The instruments most commonly used to collect prevalences of anxiety were the GAD (6 studies) and the DAS-21 (6 studies), for depression the PHQ-9 (6 studies) and for stress the DAS-21 (5 studies) all studies assessed clinically significant symptoms over time, over one to two weeks, up to one month.

The estimated proportion of college students assessed with clinically significant symptoms for the long-term period for anxiety was 37% (95% confidence interval [CI] 32%-42%) with significant evidence of heterogeneity across studies ( $I^2 = 97.92\%$ ), for depression was 31% (95% confidence interval [CI] 23%-41%) with significant evidence of heterogeneity between studies ( $I^2 = 99.49\%$ ) and for stress was 41% (95% confidence interval [CI] 25%-59%) with significant evidence of heterogeneity between studies ( $I^2 = 99.29\%$ ).

In subgroup analysis, geographic location was related to symptoms of anxiety, depression, and stress, while instrument measurement was related to clinical symptoms of depression and stress (Table 3). The highest prevalences were observed during the first wave for the three study variables. The highest levels for anxiety, depression and stress were observed in Bangladesh (55%), Turkey (53%) and Lebanon (75%) respectively. Studies using the DASS 21 anxiety scales (n=6) reported the highest pooled prevalence: 40% (95 % CI: 30%- 50%), for depression the highest prevalences were reported by the PHQ (either full or short version; n=9) with 29% (95 % CI: 22%- 37%) and for stressor during quarantine (n=1) with prevalence of 75% (95 % CI: 64%- 83%) (Table S6).

The prevalences assessed for the two periods are similar both in the short and long term for anxiety and depression, showing a slight increase of 3% in anxiety in the second period. With regard to depression and stress, a reduction of 7% and 13% respectively was found for the long-term assessment. Due to the overlapping of the confidence intervals, the differences between the two periods analysed are not statistically significant. It is also worth mentioning that the heterogeneity of results between studies is very large in all cases ( $I^2 > 97\%$ ), as reflected in the Forest Plots.

#### **4. Discussion**

Our review found that there is no evidence of worsening mental health in the long-term period, which we interpret as the chronic phase, versus the short-term period coinciding with the first wave of the pandemic, understood as the acute stress/adaptive response. Although the confidence intervals are highly overlapping, there is a trend towards a slight reduction in stress (51% to 41%) and depression (38% to 31%), in anxiety there is a very slight rebound (34% to 37%) but this does not allow us to explain an increasing or decreasing evolution, we can simply infer that there is no worsening in mental health due to a cumulative effect. Results similar to those found in German university students with data obtained before and during the COVID-19 pandemic found no significant increase in stress and depression, only a minor elevation of

anxiety between 2019 and 2020 (95), which is contradictory to other studies reporting high prevalence of anxiety and depression symptoms and stress in Swiss (96) and Italian (97) students. These results do not give evidence to the “pandemic fatigue”, a concept introduced by the World Health Organization (98) to explain a state of demotivation and tiredness influenced by emotions, experiences and perceptions related to exposure to a prolonged, severe, and restricted pandemic that sometimes leads to psychological discomfort and abandonment of prevention and self-care guidelines.

The results of the study also suggest a public health concern in relation to the high prevalences found in anxiety, depression and stress in university students when compared to other groups such as the general population, whose prevalences ranging from 15% to 33% in distress, anxiety, depression and stress (6,99,100), health workers 16% to 23% of distress (101,102), and older adults, with prevalences ranging from 12% to 28% (103,104). This confirms college students are a vulnerable group (105) explained to a large extent by an interaction of factors risks previous to the pandemic with factor risks intrinsic to the pandemic (i.e., more extensive restrictions than the rest of the population who recovered their routines much earlier than the university communities; 102,106,107). Students as a vulnerable group are exposed to new experiences and begin a stage of autonomy responding to family and personal expectations (108) that often exceeds their capacities and resources because they require greater self-regulation and emotional self-management (109), exposing themselves to psychosocial factors that can produce anxiety about the future, excessive academic load with long hours, exams, among others, all this generating the need to adapt to a new context.

The subgroup analysis for the present study allowed us to explore the prevalences for the first period and second period in relation to the confinement measures of being confined and leaving home with exceptions, as well as data collected during the first wave of COVID showed higher prevalences of anxiety, depression, and stress. For countries and territories, we found that Czechs (12%) and Nigerians (22%) for the first and second periods respectively were less anxious, as well as the number of new cases and deaths resulting from COVID-19 (110). The United States and the United Kingdom and Lebanon presented the highest levels of stress with 84%, explained by academic uncertainty, lack of reliable information, peer support (112) and financial uncertainty (113). The measures to mitigate COVID were also analysed regarding the the COVID wave, the hardiness of the confinement measures and the severity of the pandemic, observing high prevalences of anxiety and stress during the first wave, mobility restrictions and confinement measures due to misinformation regarding the virus, the increase in cases and deaths, and the lack of effective treatments to deal with the disease (114-116). It is important to highlight that, by including studies from different parts of the world, this can probably explain the heterogeneity of the data because mental health problems are culturally linked to how they are understood, conceptualized and evaluated (117), giving importance to the latter we found that the prevalences of distress varied according to the methodological differences for both the first and second period, in relation to the assessment instrument used in this case the highest grouped prevalence for anxiety of 48%, depression of 72% and stress of 63% was given by STAI, CES-D, PSS respectively for the first period and by the DASS, PHQ and Stressor during quarantine either in full or short version, were data similar to those found in other meta-analyses with general population (118) and university students (119) it should be noted that self-report measures are widely used and have been validated as a means to assess negative symptoms such as anxiety, depression and stress, because they allow spending less time and resources (120) but have several ways to be qualified, in relation to clinical ratings (severity ranges: low, medium, moderate or high) or absence and presence of symptoms which may explain the discrepancy between high and low score ranges, the selection of cut-off points represents a compromise between specificity and sensitivity according to the case used (121), in the present meta-analysis some studies do not report cut-off points (49).

#### **4.1. Limitations and strengths**

Our research should be interpreted considering limitations considering the high heterogeneity of the studies similar to data found in meta-analyses exploring mental health conditions in other populations during COVID-19 (122-124). In the present study, heterogeneity for anxiety (periods 1 and 2) and depression (periods 1 and 2) can be explained by factors intrinsic to the pandemic (severity in relation to restrictive measures) factors that may be both structural to the country and the country's response to the pandemic ("geographic location" variable), but also due to different metrics employed (different instruments, with different versions, with different symptom severity classification cutoff points). In the present review we pooled data from different versions of the GAD, DAS, GHQ and PHQ measures, a practice that is common in systematic reviews but methodologically questionable (125), which is justified in the subgroup analysis where we found that prevalence estimates varied according to the measurement instrument used. On the other hand, it is important to highlight that our meta-analysis had a representative sample of college students with large sample sizes; however, most of the articles did not report in detail how response rates were handled. In addition, most of the studies are from Asia and Europe, few studies are from the West which could be interpreted in light of the data of interest, which was prevalence reporting, showing a gap in the literature from the Americas that needs to be addressed, limiting the degree of generalizability of the findings.

However, our study has important strengths, mainly complying with a rigorous protocol PRISMA guidelines, prospective registration in PROSPERO, validation of Boolean searches according to PRESS guidelines, the inclusion of the Rayyan tool in order to minimize the possible loss of evidence and the consensus review between two reviewers in the different phases of screening, data extraction and RoB. In turn, this review responds to proposals made by other authors (126) to provide greater support and scientific background to reviews related to the topic of COVID-19 and mental health in this case applied to students in a university context.

#### **5. Conclusions**

Our research provided an analysis of the high prevalence of anxiety, depression and stress in university students when compared with normal time and general population or other risk groups (health personnel, older adults, among others). This suggests that university students are a high-risk group. Furthermore, when comparing two periods of time for depression and stress, a slight decrease in prevalence is found, unlike anxiety, but this does not allow us to explain an increasing or decreasing evolution; we can simply infer that there is no worsening in mental health due to a cumulative effect.

It is necessary in view of the prevalence of mental health problems in university students to recognize the importance of prevention and promotion of mental health in Higher Education Institutions, approximately 56% of the students, although they present psychological discomfort do not consult, therefore, they do not receive attention from mental health professionals (127), among the factors of non-consultation is the inaccessibility to mental health services, negative attitudes and lack of knowledge about mental health problems (128). Educational institutions can play an important role in reducing stigma, increasing awareness about mental health services and creating a supportive environment on campus to encourage students to seek the help they need, as well as in the management of public policies at national levels with the Ministries of Education and/or Health that establish intervention and accompaniment strategies that promote more motivating, sustainable and healthy educational environments, being a strategic priority for Higher Education Institutions to prevent distress and improve wellbeing as a demand sought by the university student community.

## 6. References

1. Perper R, Al-Arshani S, Secon H. Business Insider. 2020. Nearly a third of Americans are now under orders to stay home — here's a running list of coronavirus lockdowns in US states and cities. Available from: <https://www.businessinsider.com/states-cities-shutting-down-bars-restaurants-concerts-curfew-2020-3?r=US&IR=T>
2. Sibley CG, Greaves LM, Satherley N, Wilson MS, Overall NC, Lee CHJ, et al. Effects of the COVID-19 pandemic and nationwide lockdown on trust, attitudes toward government, and well-being. *Am Psychol.*; 2020, 75(5): 618-630. Available from: <https://doi.org/10.29333/iji.2021.14434a>
3. Alomyan H. The Impact of Distance Learning on the Psychology and Learning of University Students during the COVID-19 Pandemic. *International Journal of Instruction* [Internet]. 2021 Oct [cited 2023 Sep 3];14(4):585–606. Available from: <https://doi.org/10.29333/iji.2021.14434a>
4. Auerbach RP, Mortier P, Bruffaerts R, Alonso J, Benjet C, Cuijpers P, et al. WHO world mental health surveys international college student project: Prevalence and distribution of mental disorders. *J Abnorm Psychol.* 2018 Oct 1;127(7):623–38.
5. Sanabria-Mazo JP, Useche-Aldana B, Ochoa PP, Rojas-Gualdrón DF, Mateo-Canedo C, Carmona-Cervelló M, et al. Social inequities in the impact of COVID-19 lockdown measures on the mental health of a large sample of the Colombian population (PSY-COVID study). *J Clin Med* [Internet]. 2021 Nov 1 [cited 2023 Sep 3];10(22):5297. Available from: <https://www.mdpi.com/2077-0383/10/22/5297/htm>
6. Jiménez-Villamizar MP, Muro A, Navarro JB, Carmona M, Cladellas R, Feliu-Soler A, et al. Predictive Factors of the Psychological Impact of the COVID-19 Pandemic on University Students in Six Ibero-American Countries. Preprint [Internet]. [cited 2023 Sep 3]; Available from: <https://papers.ssrn.com/abstract=4437025>
7. Zapata-Ospina JP, Patiño-Lugo DF, Vélez CM, Campos-Ortiz S, Madrid-Martínez P, Pemberthy-Quintero S, et al. Intervenciones para la salud mental de estudiantes universitarios durante la pandemia por COVID-19: una síntesis crítica de la literatura. *Rev Colomb Psiquiatr.* 2021 Jul 1;50(3):199–213.
8. Li Y, Wang A, Wu Y, Han N, Huang H. Impact of the COVID-19 Pandemic on the Mental Health of College Students: A Systematic Review and Meta-Analysis. *Front Psychol.* 2021 Jul 14;12:669119.
9. Al Mamun F, Hosen I, Misti JM, Kaggwa MM, Mamun MA. <p>Mental Disorders of Bangladeshi Students During the COVID-19 Pandemic: A Systematic Review</p>. *Psychol Res Behav Manag* [Internet]. 2021 May 31 [cited 2023 Sep 3];14:645–54. Available from: <https://www.dovepress.com/mental-disorders-of-bangladeshi-students-during-the-covid-19-pandemic--peer-reviewed-fulltext-article-PRBM>
10. Muñoz-Fernández SI, Molina-Valdespino D, Ochoa-Palacios R, Sánchez-Guerrero O, Esquivel-Acevedo JA. Estrés, respuestas emocionales, factores de riesgo, psicopatología y manejo del personal de salud durante la pandemia por COVID-19. *Acta Pediátrica de México* [Internet]. 2020 Jun 29 [cited 2023 Sep 3];41(4S1):S127–36. Available from: <https://ojs.actapediatrica.org.mx/index.php/APM/article/view/2104>
11. Moscoso MS. Avances en la medición psicométrica de la depresión. *Liberabit* [Internet]. 2014 [cited 2023 Sep 3];20(1):29–39. Available from: [http://ojs3.revistaliberabit.com/publicaciones/revistas/RLE\\_20\\_1\\_avances-en-la-medicion-psicometrica-de-la-depresion.pdf](http://ojs3.revistaliberabit.com/publicaciones/revistas/RLE_20_1_avances-en-la-medicion-psicometrica-de-la-depresion.pdf)

12. Wang C, Pan R, Wan X, Tan Y, Xu L, McIntyre RS, et al. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain Behav Immun*. 2020 Jul 1;87:40–8.
13. Byrom N. COVID-19 and the Research Community: The challenges of lockdown for early-career researchers. *Elife*. 2020;9:1–3.
14. Johnson MC, Saletti-Cuesta L, Tumas N. Emociones, preocupaciones y reflexiones frente a la pandemia del COVID-19 en Argentina. *Cien Saude Colet* [Internet]. 2020 Jun 5 [cited 2023 Sep 3];25:2447–56. Available from: <https://www.scielo.br/j/csc/a/XgjkzZ9F6JJ9grmBGDdNBH/?lang=es>
15. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* [Internet]. 2021 Mar 29 [cited 2023 Sep 3];372. Available from: <https://www.bmj.com/content/372/bmj.n71>
16. Rethlefsen ML, Kirtley S, Waffenschmidt S, Ayala AP, Moher D, Page MJ, et al. PRISMA-S: an extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews. *Syst Rev* [Internet]. 2021 Dec 1 [cited 2023 Sep 3];10(1):1–19. Available from: <https://systematicreviewjournal.biomedcentral.com/articles/10.1186/s13643-020-01542-z>
17. Perestelo-Perez L. Standards on how to develop and report systematic reviews in Psychology and Health. *International Journal of Clinical and Health Psychology*. 2013 Jan 1;13(1):49–57.
18. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan-a web and mobile app for systematic reviews. *Syst Rev* [Internet]. 2016 Dec 5 [cited 2023 Sep 3];5(1):1–10. Available from: <https://systematicreviewjournal.biomedcentral.com/articles/10.1186/s13643-016-0384-4>
19. Landis JR, Koch GG. The Measurement of Observer Agreement for Categorical Data. *Biometrics*. 1977 Mar;33(1):159.
20. Aromataris E, Munn Z. JBI Manual for Evidence Synthesis. *JBI Manual for Evidence Synthesis* [Internet]. 2020 [cited 2023 Sep 3]; Available from: <https://jbi-global-wiki.refined.site/space/MANUAL>
21. Ochnik D, Rogowska AM, Kuśnierz C, Jakubiak M, Schütz A, Held MJ, et al. Mental health prevalence and predictors among university students in nine countries during the COVID-19 pandemic: a cross-national study. *Sci Rep*. 2021 Sep;11(1):18644.
22. Yassin Abas IM, Alejail Isra IEM, Ali Suad M. Anxiety among the Sudanese university students during the initial stage of COVID-19 pandemic. *Heliyon* [Internet]. 2021 Mar 1 [cited 2023 Sep 4];7(3). Available from: <https://pubmed.ncbi.nlm.nih.gov/33619458/>
23. AlHadi AN, Alhuwaydi AM. The mental health impact of pandemic COVID-19 crisis on university students in Saudi Arabia and associated factors. *Journal of American College Health* [Internet]. 2021 [cited 2023 Sep 4]; Available from: <https://pubmed.ncbi.nlm.nih.gov/34437818/>
24. Aylie NS, Mekonen MA, Mekuria RM. The Psychological Impacts of COVID-19 Pandemic Among University Students in Bench-Sheko Zone, South-west Ethiopia: A Community-based Cross-sectional Study. *Psychol Res Behav Manag* [Internet]. 2020 [cited 2023 Sep 4];13:813. Available from: [/pmc/articles/PMC7533263/](https://pubmed.ncbi.nlm.nih.gov/34437818/)

25. Chen T, Lucock M. The mental health of university students during the COVID-19 pandemic: An online survey in the UK. *PLoS One* [Internet]. 2022 Jan 1 [cited 2023 Sep 4];17(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/35020758/>
26. Chinna K, Sundarasan S, Khoshaim HB, Kamaludin K, Nurunnabi M, Baloch GM, et al. Psychological impact of COVID-19 and lock down measures: An online cross-sectional multicounty study on Asian university students. *PLoS One* [Internet]. 2021 Aug 1 [cited 2023 Sep 4];16(8):e0253059. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0253059>
27. Conceição V, Rothes I, Gusmão R. The Association Between Changes in the University Educational Setting and Peer Relationships: Effects in Students' Depressive Symptoms During the COVID-19 Pandemic. *Front Psychiatry* [Internet]. 2021 Dec 14 [cited 2023 Sep 4];12. Available from: <https://pubmed.ncbi.nlm.nih.gov/34970167/>
28. Dhar BK, Ayithey FK, Sarkar SM. Impact of COVID-19 on Psychology among the University Students. *Global Challenges* [Internet]. 2020 Nov 1 [cited 2023 Sep 4];4(11):2000038. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1002/gch2.202000038>
29. Dratva J, Zysset A, Schlatter N, von Wyl A, Huber M, Volken T. Swiss University Students' Risk Perception and General Anxiety during the COVID-19 Pandemic. *Int J Environ Res Public Health* [Internet]. 2020 Oct 2 [cited 2023 Sep 4];17(20):1–11. Available from: <https://pubmed.ncbi.nlm.nih.gov/33066008/>
30. El-Monshed AH, El-Adl AA, Ali AS, Loutfy A. University students under lockdown, the psychosocial effects and coping strategies during COVID-19 pandemic: A cross sectional study in Egypt. *Journal of American College Health* [Internet]. 2022 [cited 2023 Sep 4];70(3):679–90. Available from: <https://pubmed.ncbi.nlm.nih.gov/33651672/>
31. EMRE N, Sari T. Evaluation of the Behavior, Anxiety and Stress of University Students in the New Type of Coronavirus Pandemic. *Konuralp Medical Journal* [Internet]. 2021 Mar 11 [cited 2023 Sep 4];13(1):24–9. Available from: <http://search.yayin/detay/427814>
32. Faisal RA, Jobe MC, Ahmed O, Sharker T. Mental Health Status, Anxiety, and Depression Levels of Bangladeshi University Students During the COVID-19 Pandemic. *Int J Ment Health Addict* [Internet]. 2022 Jun 1 [cited 2023 Sep 4];20(3):1500. Available from: </pmc/articles/PMC7781410/>
33. Feng S, Zhang Q, Ho SMY. Fear and anxiety about COVID-19 among local and overseas Chinese university students. *Health Soc Care Community* [Internet]. 2021 Nov 1 [cited 2023 Sep 4];29(6):e249–58. Available from: <https://pubmed.ncbi.nlm.nih.gov/33825220/>
34. Garvey AM, García IJ, Franco SHO, Fernández CM. The Psychological Impact of Strict and Prolonged Confinement on Business Students during the COVID-19 Pandemic at a Spanish University. *Int J Environ Res Public Health* [Internet]. 2021 Feb 2 [cited 2023 Sep 4];18(4):1–13. Available from: </pmc/articles/PMC7916562/>
35. Irfan M, Shahudin F, Hooper VJ, Akram W, Abdul Ghani RB. The Psychological Impact of Coronavirus on University Students and its Socio-Economic Determinants in Malaysia. *Inquiry* [Internet]. 2021 [cited 2023 Sep 4];58. Available from: <https://pubmed.ncbi.nlm.nih.gov/34802264/>
36. Akhtarul Islam M, Barna SD, Raihan H, Nafiul Alam Khan M, Tanvir Hossain M. Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. *PLoS One* [Internet]. 2020 Aug 1 [cited 2023 Sep 4];15(8). Available from: </pmc/articles/PMC7449469/>

37. Jones HE, Manze M, Ngo V, Lamberson P, Freudenberg N. The Impact of the COVID-19 Pandemic on College Students' Health and Financial Stability in New York City: Findings from a Population-Based Sample of City University of New York (CUNY) Students. *J Urban Health* [Internet]. 2021 Apr 1 [cited 2023 Sep 4];98(2):187–96. Available from: <https://pubmed.ncbi.nlm.nih.gov/33570739/>
38. Karing C. Prevalence and predictors of anxiety, depression and stress among university students during the period of the first lockdown in Germany. *J Affect Disord Rep* [Internet]. 2021 Jul 1 [cited 2023 Sep 4];5. Available from: <https://pubmed.ncbi.nlm.nih.gov/34642682/>
39. Khoshaim HB, Al-Sukayt A, Chinna K, Nurunnabi M, Sundarasan S, Kamaludin K, et al. Anxiety Level of University Students During COVID-19 in Saudi Arabia. *Front Psychiatry*. 2020 Dec 11;11:579750.
40. Kohls E, Baldofski S, Moeller R, Klemm SL, Rummel-Kluge C. Mental Health, Social and Emotional Well-Being, and Perceived Burdens of University Students During COVID-19 Pandemic Lockdown in Germany. *Front Psychiatry* [Internet]. 2021 Apr 6 [cited 2023 Sep 4];12. Available from: <https://pubmed.ncbi.nlm.nih.gov/33889102/>
41. Le Vigouroux S, Goncalves A, Charbonnier E. The Psychological Vulnerability of French University Students to the COVID-19 Confinement. *Health Educ Behav* [Internet]. 2021 Apr 1 [cited 2023 Sep 4];48(2):123–31. Available from: <https://pubmed.ncbi.nlm.nih.gov/33472453/>
42. Martín-Cano M del C, Díaz-Jiménez RM, Caravaca-Sánchez F, de La Fuente-Robles YM. Depression, anxiety and stress in social work students during COVID-19 confinement. A comparative study of Spanish and Mexican universities. *Soc Work Ment Health* [Internet]. 2021 [cited 2023 Sep 4];20(3):259–81. Available from: <https://www.tandfonline.com/doi/abs/10.1080/15332985.2021.2005739>
43. Mohammed Z, Arafa A, Atlam ES, El-Qerafi N, El-Shazly M, Al-Hazazi O, et al. Psychological problems among the university students in Saudi Arabia during the COVID-19 pandemic. *Int J Clin Pract* [Internet]. 2021 Nov 1 [cited 2023 Sep 4];75(11). Available from: <https://pubmed.ncbi.nlm.nih.gov/34516702/>
44. Mridul, Bisht B, Sharma D, Kaur N. Online classes during covid-19 pandemic: Anxiety, stress & depression among university students. *Indian Journal of Forensic Medicine and Toxicology* [Internet]. 2021 Jan 1 [cited 2023 Sep 4];15(1):186–9. Available from: <https://doi.org/10.37506/ijfmt.v15i1.13394>
45. Muzaffar R, Koly KN, Choudhury S, Biswas MAAJ, Kader SB, Abdullah R, et al. Generalized anxiety disorder among Bangladeshi university students during COVID-19 pandemic: gender specific findings from a cross-sectional study. *Discover Mental Health* [Internet]. 2022 Dec [cited 2023 Sep 4];2(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/35194592/>
46. Najjuka SM, Checkwech G, Olum R, Ashaba S, Kaggwa MM. Depression, anxiety, and stress among Ugandan university students during the COVID-19 lockdown: an online survey. *Afr Health Sci* [Internet]. 2021 [cited 2023 Sep 4];21(4):1533–43. Available from: <https://pubmed.ncbi.nlm.nih.gov/35283951/>
47. Ochnik D, Rogowska AM, Kuśnierz C, Jakubiak M, Schütz A, Held MJ, et al. Mental health prevalence and predictors among university students in nine countries during the COVID-19 pandemic: a cross-national study. *Sci Rep* [Internet]. 2021 Sep 20 [cited 2023 Sep 4];11(1):1–13. Available from: <https://www.nature.com/articles/s41598-021-97697-3>

48. Padrón I, Fraga I, Vieitez L, Montes C, Romero E. A Study on the Psychological Wound of COVID-19 in University Students. *Front Psychol* [Internet]. 2021 Jan 26 [cited 2023 Sep 4];12. Available from: <https://pubmed.ncbi.nlm.nih.gov/33574786/>
49. Şahín CU, Serbest Baz AN. Views and Anxiety Levels of University Students Regarding Distance Education during the Covid-19 Pandemic. *Journal of Higher Education Turkey* [Internet]. 2021 Dec 31 [cited 2023 Sep 3];11(3):617–24. Available from: <https://dergipark.org.tr/en/pub/yuksekokretim/issue/68085/1057148>
50. Islam MS, Sujan MSH, Tasnim R, Sikder MT, Potenza MN, van Os J. Psychological responses during the COVID-19 outbreak among university students in Bangladesh. *PLoS One* [Internet]. 2020 [cited 2023 Sep 3];15(12):e0245083. Available from: <https://pubmed.ncbi.nlm.nih.gov/33382862/>
51. Saravanan C, Mahmoud I, Elshami W, Taha MH. Knowledge, Anxiety, Fear, and Psychological Distress About COVID-19 Among University Students in the United Arab Emirates. *Front Psychiatry* [Internet]. 2020 Oct 22 [cited 2023 Sep 3];11. Available from: <https://pubmed.ncbi.nlm.nih.gov/33192728/>
52. Sazakli E, Leotsinidis M, Bakola M, Kitsou KS, Katsifara A, Konstantopoulou A, et al. Prevalence and associated factors of anxiety and depression in students at a Greek university during COVID-19 lockdown. *J Public Health Res* [Internet]. 2021 Jun 24 [cited 2023 Sep 3];10(3). Available from: <https://pubmed.ncbi.nlm.nih.gov/33960758/>
53. Schwartz SE, Ross SG, Bryant JA, Duncan JD. Mental and physical health among students at a private university that held in-person classes during the COVID-19 pandemic. *J Am Coll Health* [Internet]. 2022 [cited 2023 Sep 3];17:1–11. Available from: <https://pubmed.ncbi.nlm.nih.gov/35298366/>
54. Simegn W, Dagne B, Yeshaw Y, Yitayih S, Woldegerima B, Dagne H. Depression, anxiety, stress and their associated factors among Ethiopian University students during an early stage of COVID-19 pandemic: An online-based cross-sectional survey. *PLoS One* [Internet]. 2021 May 1 [cited 2023 Sep 3];16(5). Available from: <https://pubmed.ncbi.nlm.nih.gov/34048434/>
55. Stamatis CA, Broos HC, Hudiburgh SE, Dale SK, Timpano KR. A longitudinal investigation of COVID-19 pandemic experiences and mental health among university students. *Br J Clin Psychol* [Internet]. 2022 Jun 1 [cited 2023 Sep 3];61(2):385–404. Available from: <https://pubmed.ncbi.nlm.nih.gov/34850405/>
56. Sundarasan S, Chinna K, Kamaludin K, Nurunnabi M, Baloch GM, Khoshaim HB, et al. Psychological Impact of COVID-19 and Lockdown among University Students in Malaysia: Implications and Policy Recommendations. *Int J Environ Res Public Health* [Internet]. 2020 Aug 27 [cited 2023 Sep 3];17(17):6206. Available from: <https://www.mdpi.com/1660-4601/17/17/6206/htm>
57. Tasnim R, Islam MS, Sujan MSH, Sikder MT, Potenza MN. Suicidal ideation among Bangladeshi university students early during the COVID-19 pandemic: Prevalence estimates and correlates. *Child Youth Serv Rev* [Internet]. 2020 Dec 1 [cited 2023 Sep 3];119. Available from: <https://pubmed.ncbi.nlm.nih.gov/33204046/>
58. Wang X, Chen H, Liu L, Liu Y, Zhang N, Sun Z, et al. Anxiety and Sleep Problems of College Students During the Outbreak of COVID-19. *Front Psychiatry* [Internet]. 2020 Nov 23 [cited 2023 Sep 3];11. Available from: <https://pubmed.ncbi.nlm.nih.gov/33329134/>
59. Van Der Feltz-Cornelis CM, Varley D, Allgar VL, de Beurs E. Workplace Stress, Presenteeism, Absenteeism, and Resilience Amongst University Staff and Students in

- the COVID-19 Lockdown. *Front Psychiatry* [Internet]. 2020 Nov 27 [cited 2023 Sep 3];11. Available from: <https://pubmed.ncbi.nlm.nih.gov/33329135/>
60. Yang KH, Wang L, Liu H, Li LX, Jiang XL. Impact of coronavirus disease 2019 on the mental health of university students in Sichuan Province, China: An online cross-sectional study. *Int J Ment Health Nurs* [Internet]. 2021 Aug 1 [cited 2023 Aug 25];30(4):875–84. Available from: <https://pubmed.ncbi.nlm.nih.gov/33704896/>
  61. D'Hondt F, Wathelet M, Duhem S, Vaiva G, Baubet T, Habran E, et al. Factors Associated With Mental Health Disorders Among University Students in France Confined During the COVID-19 Pandemic. *JAMA Netw Open* [Internet]. 2020 Oct 23 [cited 2023 Aug 25];3(10). Available from: [/pmc/articles/PMC7584927/](https://pubmed.ncbi.nlm.nih.gov/354927/)
  62. Zhou SJ, Wang LL, Qi M, Yang XJ, Gao L, Zhang SY, et al. Depression, Anxiety, and Suicidal Ideation in Chinese University Students During the COVID-19 Pandemic. *Front Psychol* [Internet]. 2021 Aug 5 [cited 2023 Sep 3];12. Available from: [/pmc/articles/PMC8375404/](https://pubmed.ncbi.nlm.nih.gov/375404/)
  63. Charbonnier E, Le Vigouroux S, Goncalves A. Psychological Vulnerability of French University Students during the COVID-19 Pandemic: A Four-Wave Longitudinal Survey. *Int J Environ Res Public Health*. 2021 Sep;18(18).
  64. Yu Y, She R, Luo S, Xin M, Li L, Wang S, et al. Factors Influencing Depression and Mental Distress Related to COVID-19 Among University Students in China: Online Cross-sectional Mediation Study. *JMIR Ment Health* [Internet]. 2021 Feb 1 [cited 2023 Sep 3];8(2). Available from: <https://pubmed.ncbi.nlm.nih.gov/33616541/>
  65. Wang C, Zhao H. The Impact of COVID-19 on Anxiety in Chinese University Students. *Front Psychol*. 2020 May 22;11:543467.
  66. Villani L, Pastorino R, Molinari E, Anelli F, Ricciardi W, Graffigna G, et al. Impact of the COVID-19 pandemic on psychological well-being of students in an Italian university: a web-based cross-sectional survey. *Global Health* [Internet]. 2021 Dec 1 [cited 2023 Sep 3];17(1):1–14. Available from: <https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-021-00680-w>
  67. Herbert C, El Bolock A, Abdennadher S. How do you feel during the COVID-19 pandemic? A survey using psychological and linguistic self-report measures, and machine learning to investigate mental health, subjective experience, personality, and behaviour during the COVID-19 pandemic among univers. *BMC Psychol* [Internet]. 2021 Dec 1 [cited 2023 Sep 4];9(1):1–23. Available from: <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-021-00574-x>
  68. Jing Y, Han W, Wang Y, Zhang J, Qin W, Jing X, et al. Network-Based Online Survey Exploring Self-Reported Depression Among University and College Students During the Early Days of the COVID-19 Outbreak. *Front Psychiatry* [Internet]. 2021 May 13 [cited 2023 Sep 4];12. Available from: <https://pubmed.ncbi.nlm.nih.gov/34054614/>
  69. Karmokar S, Islam MdA, Muktedir MH Al, Hasan R, Tareq AM, Amin MN, et al. Depression and Behavioral Changes Associated with Social Media Dependency During COVID-19 Pandemic Among University Students in Bangladesh: A Cross-Sectional Study. *Makara Journal of Health Research* [Internet]. 2021 Dec 30 [cited 2023 Sep 4];25(3):3. Available from: <https://scholarhub.ui.ac.id/mjhr/vol25/iss3/3>
  70. Tang W, Hu T, Hu B, Jin C, Wang G, Xie C, et al. Prevalence and correlates of PTSD and depressive symptoms one month after the outbreak of the COVID-19 epidemic in a sample of home-quarantined Chinese university students. *J Affect Disord* [Internet].

- 2020 Sep 1 [cited 2023 Sep 4];274:1–7. Available from: <https://pubmed.ncbi.nlm.nih.gov/32405111/>
71. Volken T, Zysset A, Amendola S, Swormink AK, Huber M, von Wyl A, et al. Depressive Symptoms in Swiss University Students during the COVID-19 Pandemic and Its Correlates. *Int J Environ Res Public Health* [Internet]. 2021 Feb 2 [cited 2023 Sep 4];18(4):1–15. Available from: <https://pubmed.ncbi.nlm.nih.gov/33557193/>
  72. Zhao B, Kong F, Nam EW. Assessing Knowledge, Preventive Practices, and Depression among Chinese University Students in Korea and China during the COVID-19 Pandemic: An Online Cross-Sectional Study. *Healthcare* [Internet]. 2021 Apr 1 [cited 2023 Sep 3];9(4). Available from: <https://pubmed.ncbi.nlm.nih.gov/33917674/>
  73. Zhao B, Kong F, Aung MN, Yuasa M, Nam EW. Novel Coronavirus (COVID-19) Knowledge, Precaution Practice, and Associated Depression Symptoms among University Students in Korea, China, and Japan. *Int J Environ Res Public Health* [Internet]. 2020 Sep 2 [cited 2023 Sep 3];17(18):1–17. Available from: <https://pubmed.ncbi.nlm.nih.gov/32933212/>
  74. Yu Y, She R, Luo S, Xin M, Li L, Wang S, et al. Factors Influencing Depression and Mental Distress Related to COVID-19 Among University Students in China: Online Cross-sectional Mediation Study. *JMIR Ment Health* [Internet]. 2021 Feb 1 [cited 2023 Sep 3];8(2). Available from: <https://pubmed.ncbi.nlm.nih.gov/33616541/>
  75. Villani L, Pastorino R, Molinari E, Anelli F, Ricciardi W, Graffigna G, et al. Impact of the COVID-19 pandemic on psychological well-being of students in an Italian university: a web-based cross-sectional survey. *Global Health* [Internet]. 2021 Dec 1 [cited 2023 Sep 3];17(1):1–14. Available from: <https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-021-00680-w>
  76. Lai AY kwan, Lee L, Wang MP, Feng Y, Lai TT kwan, Ho LM, et al. Mental Health Impacts of the COVID-19 Pandemic on International University Students, Related Stressors, and Coping Strategies. *Front Psychiatry* [Internet]. 2020 Nov 23 [cited 2023 Sep 4];11. Available from: <https://pubmed.ncbi.nlm.nih.gov/33329126/>
  77. Schröpfer K, Schmidt N, Kus S, Koob C, Coenen M. Psychological Stress among Students in Health-Related Fields during the COVID-19 Pandemic: Results of a Cross-Sectional Study at Selected Munich Universities. *Int J Environ Res Public Health* [Internet]. 2021 Jun 2 [cited 2023 Sep 4];18(12). Available from: <https://pubmed.ncbi.nlm.nih.gov/34205383/>
  78. Kassir G, El Hayek S, Zalzale H, Orsolini L, Bizri M. Psychological distress experienced by self-quarantined undergraduate university students in Lebanon during the COVID-19 outbreak. *Int J Psychiatry Clin Pract* [Internet]. 2021 [cited 2023 Sep 5];25(2):172–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/33775208/>
  79. Xu Y, Su S, Jiang Z, Guo S, Lu Q, Liu L, et al. Prevalence and Risk Factors of Mental Health Symptoms and Suicidal Behavior Among University Students in Wuhan, China During the COVID-19 Pandemic. *Front Psychiatry* [Internet]. 2021 Jul 13 [cited 2023 Sep 5];12:695017. Available from: <https://pubmed.ncbi.nlm.nih.gov/33775208/>
  80. Abubakar A, Ma'ruf M, Mizfaruddin M, Yusuf F, Maghfirah D, Muhsin M. Anxiety to COVID-19 pandemic amongst university students is related with gastrointestinal symptoms. *Bali Medical Journal* [Internet]. 2021;10(2):847–50. Available from: <https://doi.org/10.15562/bmj.v%25i%25i.2412>
  81. Adjepong M, Amoah-Agyei F, Du C, Wang W, Fenton JI, Tucker RM. Limited negative effects of the COVID-19 pandemic on mental health measures of Ghanaian university

- students. *J Affect Disord Rep* [Internet]. 2022 Jan 1 [cited 2023 Sep 4];7. Available from: <https://pubmed.ncbi.nlm.nih.gov/35018355/>
82. Kassir G, El Hayek S, Zalzale H, Orsolini L, Bizri M. Psychological distress experienced by self-quarantined undergraduate university students in Lebanon during the COVID-19 outbreak. *Int J Psychiatry Clin Pract* [Internet]. 2021 [cited 2023 Sep 4];25(2):172–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/33775208/>
  83. Masha'al D, Shahrour G, Aldalaykeh M. Anxiety and coping strategies among nursing students returning to university during the COVID-19 pandemic. *Heliyon* [Internet]. 2022 Jan 1 [cited 2023 Sep 4];8(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/35036610/>
  84. Mekonen EG, Workneh BS, Ali MS, Muluneh NY. The Psychological Impact of COVID-19 Pandemic on Graduating Class Students at the University of Gondar, Northwest Ethiopia. *Psychol Res Behav Manag* [Internet]. 2021 [cited 2023 Sep 4];14:109. Available from: </pmc/articles/PMC7881778/>
  85. Shitandi OB, Efe JOJ, Sunday IP. Impact of Covid-19 on the Mental Health of Delta State University students, Nigeria. *Acta Biomed* [Internet]. 2021 [cited 2023 Sep 4];92(4). Available from: <https://pubmed.ncbi.nlm.nih.gov/34487100/>
  86. Rahman MM, Amin T, Sultan SB, Bithi MI, Rahman F, Rahman MM. Depression, anxiety, and stress among public university students in Bangladesh during the COVID-19 pandemic. *Journal of Emergency Management* [Internet]. 2021 [cited 2023 Sep 4];19(9):99–107. Available from: <https://wmpllc.org/ojs/index.php/jem/article/view/3006>
  87. Talapko J, Perić I, Vulić P, Pustijanac E, Jukić M, Bekić S, et al. Mental Health and Physical Activity in Health-Related University Students during the COVID-19 Pandemic. *Healthcare* [Internet]. 2021 Jun 25 [cited 2023 Sep 4];9(7):801. Available from: </pmc/articles/PMC8304952/>
  88. Visser M, Law-van Wyk E. University students' mental health and emotional wellbeing during the COVID-19 pandemic and ensuing lockdown. *South African Journal of Psychology* [Internet]. 2021 Jun 1 [cited 2023 Sep 4];51(2):229. Available from: </pmc/articles/PMC8144883/>
  89. Woon LSC, Leong Bin Abdullah MFI, Sidi H, Mansor NS, Nik Jaafar NR. Depression, anxiety, and the COVID-19 pandemic: Severity of symptoms and associated factors among university students after the end of the movement lockdown. *PLoS One* [Internet]. 2021 May 1 [cited 2023 Sep 4];16(5). Available from: <https://pubmed.ncbi.nlm.nih.gov/34043731/>
  90. Yeni Elbay R, Yilmaz H, Çifteci K, Emrah K. The psychological effects of COVID 19 on medical and non-medical university students. *Psychiatr Danub* [Internet]. 2021 Sep;33(Suppl 10):126–31. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85120154585&partnerID=40&md5=0c82e224f04aacfc9073db711f980529>
  91. Mehareen J, Rahman MA, Dhira TA, Sarker AR. Prevalence and socio-demographic correlates of depression, anxiety, and co-morbidity during COVID-19: A cross-sectional study among public and private university students of Bangladesh. *J Affect Disord Rep*. 2021 Jul 1;5:100179.
  92. Lelisho ME, Tareke SA. Prevalence and Associated Factors of Depressive Symptoms Among Mizan-Tepi University Students During the COVID-19 Pandemic. *J Racial Ethn Health Disparities* [Internet]. 2023 Apr 1 [cited 2023 Sep 5];10(2):633. Available from: </pmc/articles/PMC8796746/>

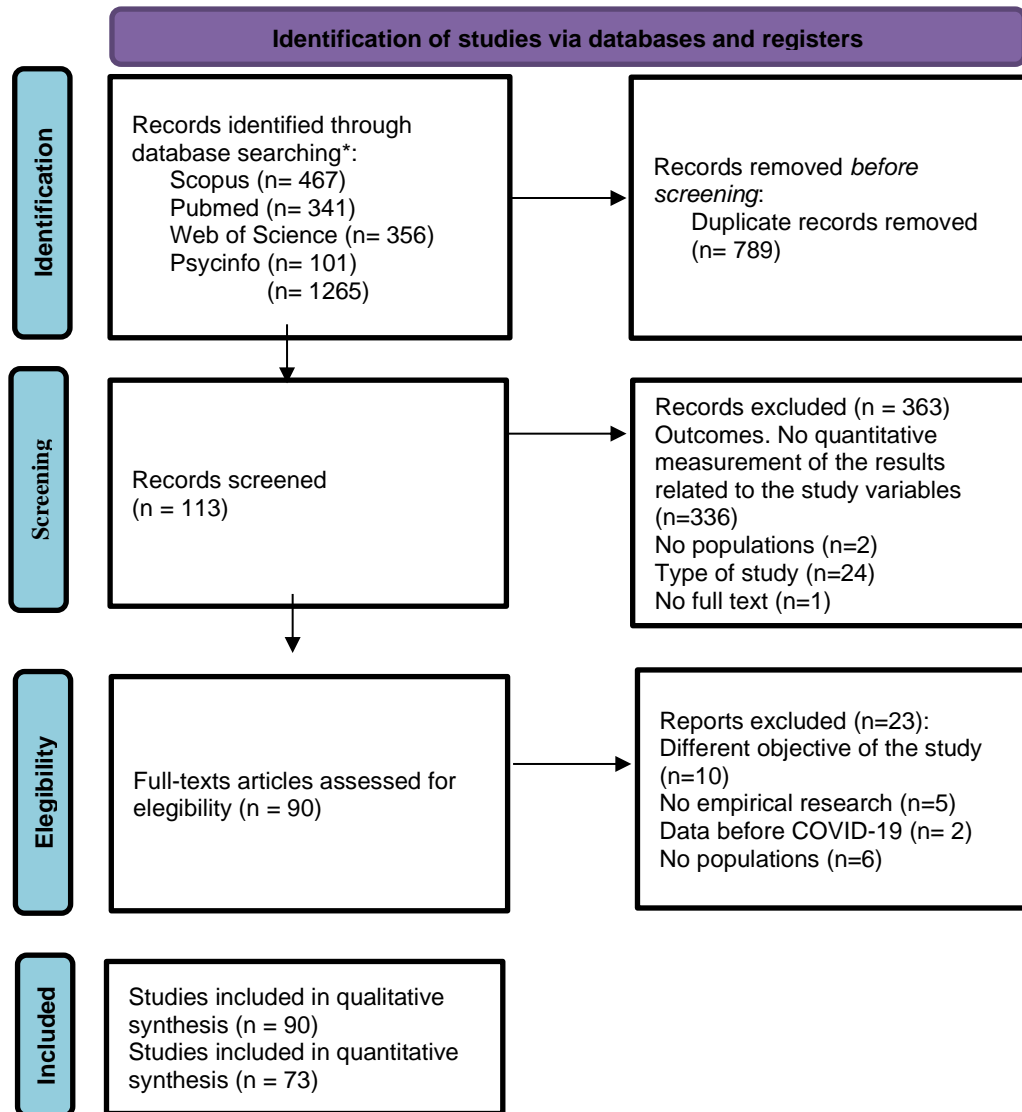
93. Malik M, Javed S. Perceived stress among university students in Oman during COVID-19-induced e-learning. *Middle East Current Psychiatry* [Internet]. 2021 Dec 1 [cited 2023 Sep 5];28(1):1–8. Available from: <https://mecp.springeropen.com/articles/10.1186/s43045-021-00131-7>
94. Yang KH, Wang L, Liu H, Li LX, Jiang XL. Impact of coronavirus disease 2019 on the mental health of university students in Sichuan Province, China: An online cross-sectional study. *Int J Ment Health Nurs* [Internet]. 2021 Aug 1 [cited 2023 Aug 25];30(4):875–84. Available from: <https://pubmed.ncbi.nlm.nih.gov/33704896/>
95. Voltmer E, Kösllich-Strumann S, Walther A, Kasem M, Obst K, Kötter T. The impact of the COVID-19 pandemic on stress, mental health and coping behavior in German University students - a longitudinal study before and after the onset of the pandemic. *BMC Public Health*. 2021 Jul;21(1):1385.
96. Elmer T, Mepham K, Stadtfeld C. Students under lockdown: Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. *PLoS One* [Internet]. 2020 Jul 1 [cited 2023 Sep 3];15(7):e0236337. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0236337>
97. Meda N, Pardini S, Slongo I, Bodini L, Zordan MA, Rigobello P, et al. Students' mental health problems before, during, and after COVID-19 lockdown in Italy. *J Psychiatr Res*. 2021 Feb 1;134:69–77.
98. Organization WH. Pandemic fatigue: reinvigorating the public to prevent COVID-19: policy framework for supporting pandemic prevention and management: revised version November 2020. [Internet]. World Health Organization. Regional Office for Europe. Copenhagen PP - Copenhagen: World Health Organization. Regional Office for Europe; 2020. Available from: <https://apps.who.int/iris/handle/10665/337574>
99. Salari N, Hosseini-Far A, Jalali R, Vaisi-Raygani A, Rasoulpoor S, Mohammadi M, et al. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Global Health* [Internet]. 2020 Jul 6 [cited 2023 Sep 3];16(1):1–11. Available from: <https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-020-00589-w>
100. van der Velden PG, Hyland P, Contino C, von Gaudecker HM, Muffels R, Das M. Anxiety and depression symptoms, the recovery from symptoms, and loneliness before and after the COVID-19 outbreak among the general population: Findings from a Dutch population-based longitudinal study. *PLoS One* [Internet]. 2021 [cited 2023 Sep 3];16(1):e0245057. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0245057>
101. Chen J, Liu X, Wang D, Jin Y, He M, Ma Y, et al. Risk factors for depression and anxiety in healthcare workers deployed during the COVID-19 outbreak in China. *Soc Psychiatry Psychiatr Epidemiol* [Internet]. 2021;56(1):47–55. Available from: <https://doi.org/10.1007/s00127-020-01954-1>
102. Gloster AT, Lamnisos D, Lubenko J, Presti G, Squatrito V, Constantinou M, et al. Impact of COVID-19 pandemic on mental health: An international study. *PLoS One* [Internet]. 2021 Dec 31;15(12):e0244809. Available from: <https://doi.org/10.1371/journal.pone.0244809>
103. García-Portilla P, de la Fuente Tomás L, Bobes-Bascarán T, Jiménez Treviño L, Zurrón Madera P, Suárez Álvarez M, et al. Are older adults also at higher psychological risk from COVID-19? *Aging Ment Health* [Internet]. 2021 Jul 3;25(7):1297–304. Available from: <https://doi.org/10.1080/13607863.2020.1805723>

104. Robb CE, de Jager CA, Ahmadi-Abhari S, Giannakopoulou P, Udeh-Momoh C, McKeand J, et al. Associations of Social Isolation with Anxiety and Depression During the Early COVID-19 Pandemic: A Survey of Older Adults in London, UK. *Front Psychiatry* [Internet]. 2020 Sep 17 [cited 2023 Sep 3];11. Available from: <https://pubmed.ncbi.nlm.nih.gov/33132942/>
105. Werner AM, Tibubos AN, Mülder LM, Reichel JL, Schäfer M, Heller S, et al. The impact of lockdown stress and loneliness during the COVID-19 pandemic on mental health among university students in Germany. *Scientific Reports* 2021 11:1 [Internet]. 2021 Nov 22 [cited 2023 Sep 3];11(1):1–11. Available from: <https://www.nature.com/articles/s41598-021-02024-5>
106. Adamson MM, Phillips A, Seenivasan S, Martinez J, Grewal H, Kang X, et al. International Prevalence and Correlates of Psychological Stress during the Global COVID-19 Pandemic. *International Journal of Environmental Research and Public Health* 2020, Vol 17, Page 9248 [Internet]. 2020 Dec 10 [cited 2023 Sep 3];17(24):9248. Available from: <https://www.mdpi.com/1660-4601/17/24/9248/htm>
107. Margraf J, Brailovskaia J, Schneider S. Behavioral measures to fight COVID-19: An 8-country study of perceived usefulness, adherence and their predictors. *PLoS One* [Internet]. 2020 Dec 1 [cited 2023 Sep 3];15(12):e0243523. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0243523>
108. Pinto Aragón EE, Villa Navas RA, Pinto Aragón AH. Estrés académico en estudiantes de la Universidad de La Guajira, Colombia. *Rev Cienc Soc* [Internet]. 2022 May 25 [cited 2023 Sep 3];28(ESPECIAL 5):87–99. Available from: <https://produccioncientificaluz.org/index.php/racs/article/view/38147/42188>
109. Handayani MS, Wangid MN, Julius A. The Impact of Self-Management Techniques to Improve University Students' Social Cognition. *Islamic Guidance and Counseling Journal* [Internet]. 2021 Jan 31 [cited 2023 Sep 3];4(1):116–23. Available from: <https://journal.iaimnumetrolampung.ac.id/index.php/igcj/article/view/1247>
110. Kleiman EM, Yeager AL, Grove JL, Kellerman JK, Kim JS. Real-time Mental Health Impact of the COVID-19 Pandemic on College Students: Ecological Momentary Assessment Study. *JMIR Ment Health* 2020;7(12):e24815 <https://mental.jmir.org/2020/12/e24815> [Internet]. 2020 Dec 15 [cited 2023 Sep 6];7(12):e24815. Available from: <https://mental.jmir.org/2020/12/e24815>
111. Bäuerle A, Teufel M, Musche V, Weismüller B, Kohler H, Hetkamp M, et al. Increased generalized anxiety, depression and distress during the COVID-19 pandemic: a cross-sectional study in Germany. *J Public Health (Bangkok)* [Internet]. 2020 Nov 23;42(4):672–8. Available from: <https://doi.org/10.1093/pubmed/fdaa106>
112. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.* 2020 May;287:112934.
113. Sigdel A, Bista A, Bhattarai N, Pun BC, Giri G, Marqusee H, et al. Depression, Anxiety and Depression-anxiety comorbidity amid COVID-19 Pandemic: An online survey conducted during lockdown in Nepal. *medRxiv* [Internet]. 2020 Jan 1;2020.04.30.20086926. Available from: <http://medrxiv.org/content/early/2020/05/06/2020.04.30.20086926.abstract>
114. Balakrishnan V, Ng WZ, Soo MC, Han GJ, Lee CJ. Infodemic and fake news – A comprehensive overview of its global magnitude during the COVID-19 pandemic in 2021: A scoping review. *International Journal of Disaster Risk Reduction.* 2022 Aug 1;78:103144.

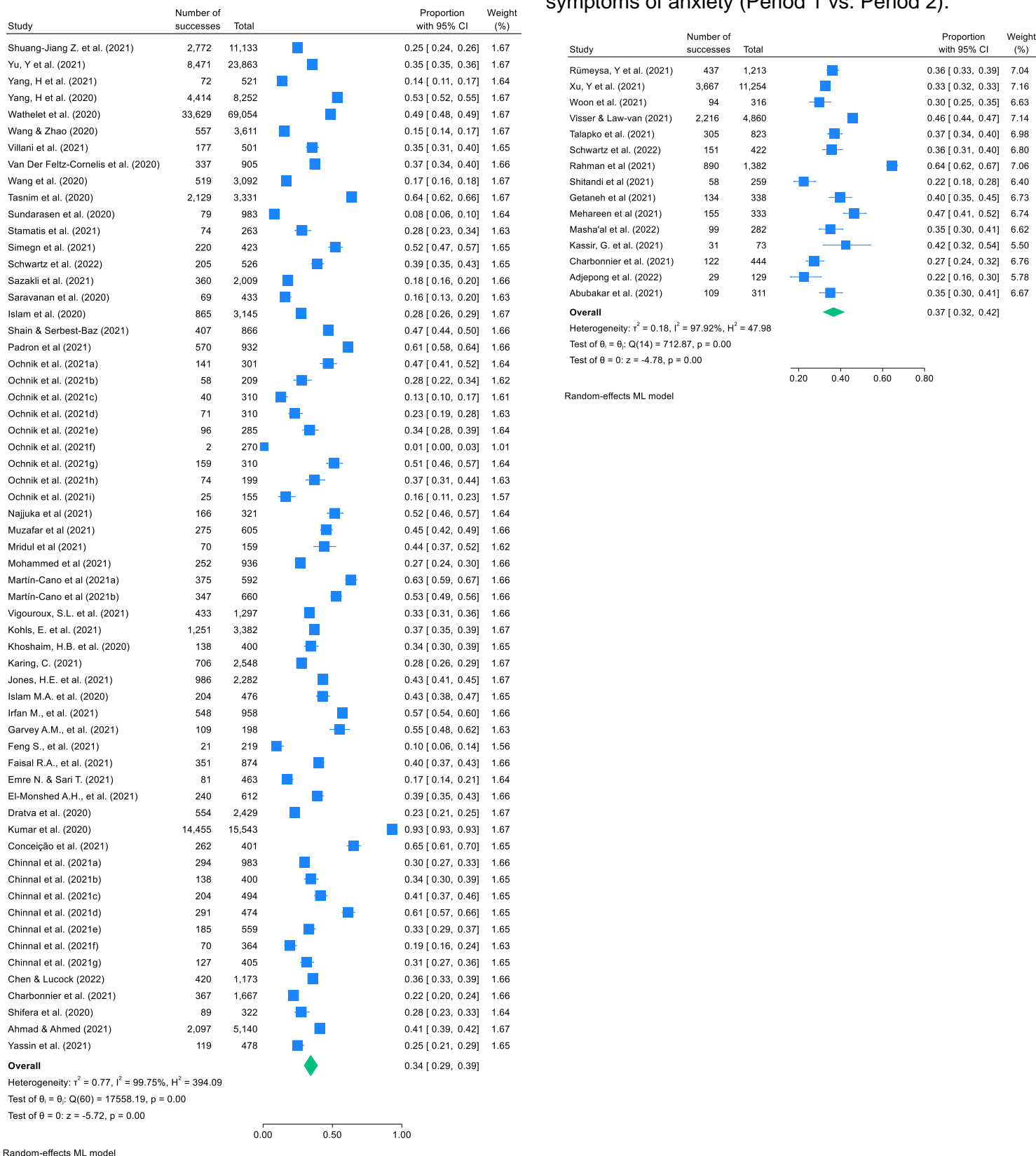
115. Guo J, Zhao Y, Wang J, Fang L, Liu S, Luo X, et al. The associations among the stress symptoms, depressive symptoms, anxiety symptoms and insomnia symptoms in depressed patients after the first COVID-19 outbreak was initially controlled in China: A prospective cohort study. *J Affect Disord*. 2022 Oct 1;314:253–8.
116. Fico G, Oliva V, De Prisco M, Fortea L, Fortea A, Giménez-Palomo A, et al. Anxiety and depression played a central role in the COVID-19 mental distress: A network analysis. *J Affect Disord*. 2023 Oct 1;338:384–92.
117. Hwang WC, Myers HF, Abe-Kim J, Ting JY. A conceptual paradigm for understanding culture's impact on mental health: The cultural influences on mental health (CIMH) model. *Clin Psychol Rev [Internet]*. 2008;28(2):211–27. Available from: <https://www.sciencedirect.com/science/article/pii/S0272735807001018>
118. Ślusarska B, Nowicki GJ, Niedorys-Karczmarczyk B, Chrzan-Rodak A. Prevalence of Depression and Anxiety in Nurses during the First Eleven Months of the COVID-19 Pandemic: A Systematic Review and Meta-Analysis. Vol. 19, *International Journal of Environmental Research and Public Health*. 2022.
119. Ahmed I, Hazell CM, Edwards B, Glazebrook C, Davies EB. A systematic review and meta-analysis of studies exploring prevalence of non-specific anxiety in undergraduate university students. *BMC Psychiatry [Internet]*. 2023;23(1):240. Available from: <https://doi.org/10.1186/s12888-023-04645-8>
120. Del Valle M, Zamora EV. El uso de las medidas de auto-informe: ventajas y limitaciones en la investigación en Psicología. *Alternativas en Psicología [Internet]*. 2022 [cited 2023 Sep 3];47:22–35. Available from: <https://ri.conicet.gov.ar/handle/11336/173600>
121. Vilagut G, Forero CG, Barbaglia G, Alonso J. Screening for Depression in the General Population with the Center for Epidemiologic Studies Depression (CES-D): A Systematic Review with Meta-Analysis. *PLoS One [Internet]*. 2016 May 16;11(5):e0155431. Available from: <https://doi.org/10.1371/journal.pone.0155431>
122. Mahmud S, Mohsin M, Dewan MdN, Muyeed A. The Global Prevalence of Depression, Anxiety, Stress, and Insomnia Among General Population During COVID-19 Pandemic: A Systematic Review and Meta-analysis. *Trends in Psychology [Internet]*. 2023;31(1):143–70. Available from: <https://doi.org/10.1007/s43076-021-00116-9>
123. Ozamiz-Etxebarria N, Idoiaga Mondragon N, Bueno-Notivol J, Pérez-Moreno M, Santabárbara J. Prevalence of Anxiety, Depression, and Stress among Teachers during the COVID-19 Pandemic: A Rapid Systematic Review with Meta-Analysis. *Brain Sci*. 2021 Sep;11(9).
124. Satinsky EN, Kimura T, Kiang M V, Abebe R, Cunningham S, Lee H, et al. Systematic review and meta-analysis of depression, anxiety, and suicidal ideation among Ph.D. students. *Sci Rep [Internet]*. 2021;11(1):14370. Available from: <https://doi.org/10.1038/s41598-021-93687-7>
125. Vandembroucke JP, von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): Explanation and Elaboration. *PLoS Med [Internet]*. 2007 Oct 16;4(10):e297. Available from: <https://doi.org/10.1371/journal.pmed.0040297>
126. Jin Y, Sun T, Zheng P, An J. Mass quarantine and mental health during COVID-19: A meta-analysis. *J Affect Disord*. 2021 Dec 1;295:1335–46.
127. Healthy Minds Network, American College of Health Association. The Impact of COVID-19 on College Student Well-being | Mental Health Technology Transfer Center (MHTTC) Network [Internet]. 2020 [cited 2023 Sep 3]. Available from: [https://bp-net.ca/wp-content/uploads/2020/07/Healthy\\_Minds\\_NCHA\\_COVID\\_Survey\\_Report\\_FINAL.pdf](https://bp-net.ca/wp-content/uploads/2020/07/Healthy_Minds_NCHA_COVID_Survey_Report_FINAL.pdf)

128. Campo-Arias A, Oviedo HC, Herazo E. [Prevalence of Mental Symptoms, Possible Cases and Disorders in Victims Displaced by the Internal Armed Conflict in Colombia: A Systematic Review]. *Rev Colomb Psiquiatr* [Internet]. 2014 [cited 2023 Sep 3];43(4):177–85. Available from: <https://pubmed.ncbi.nlm.nih.gov/26574074/>

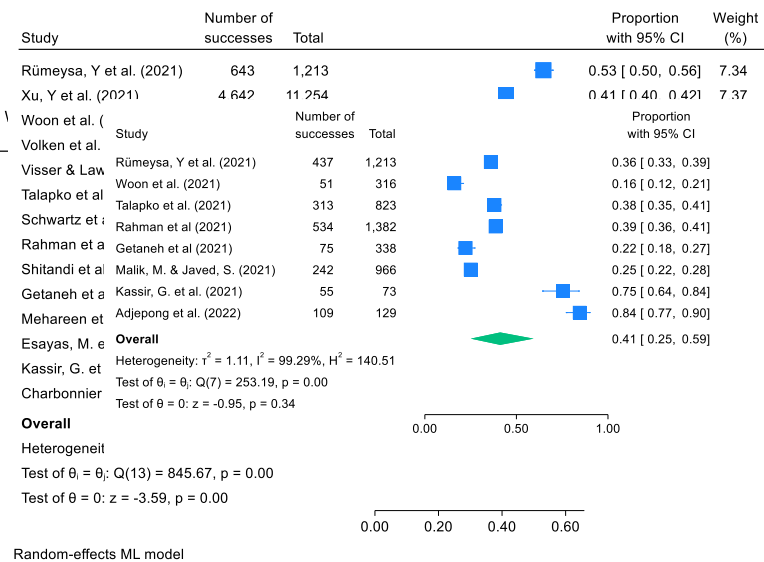
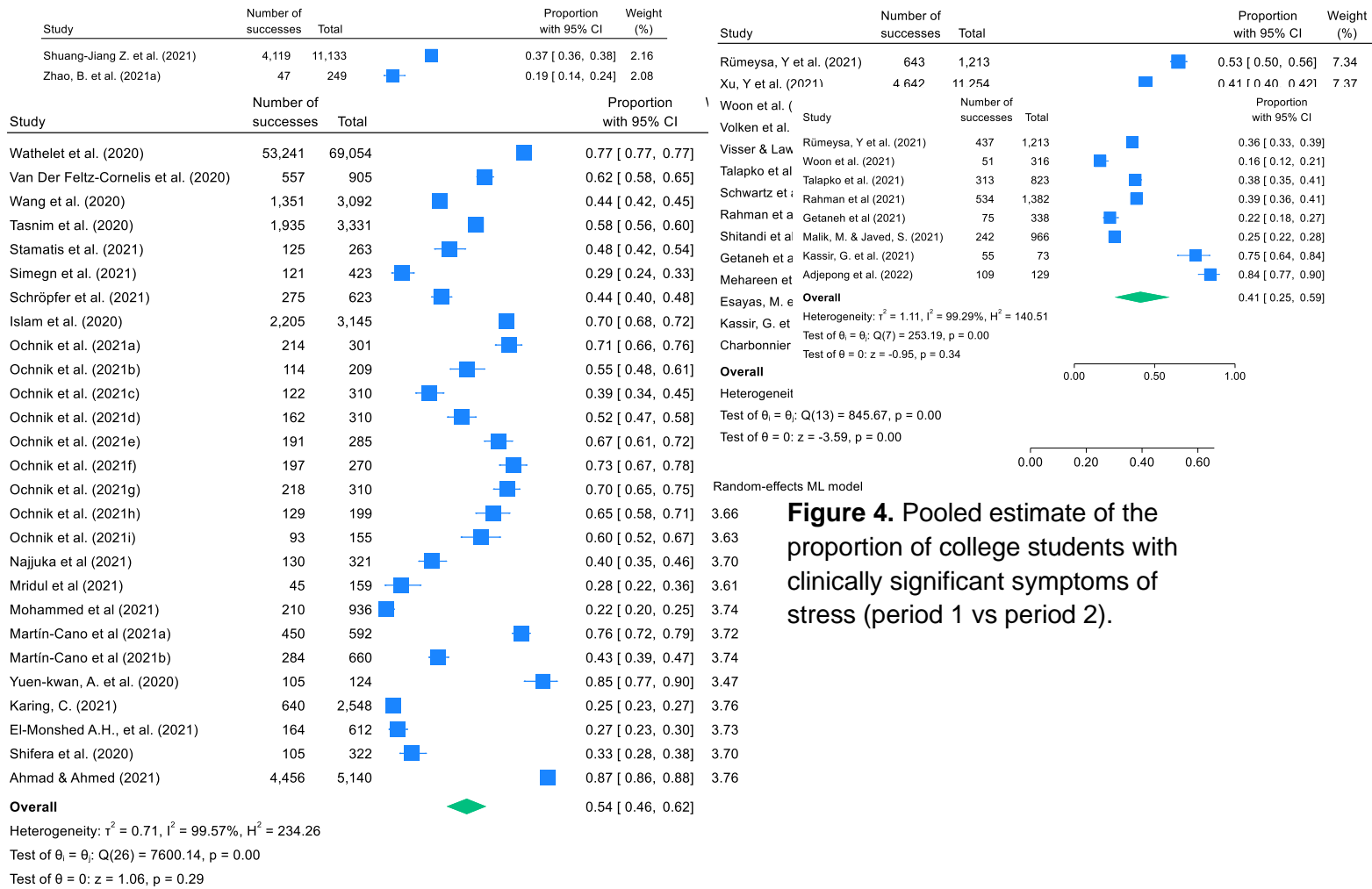
Figure 1. Flowchart of included articles.



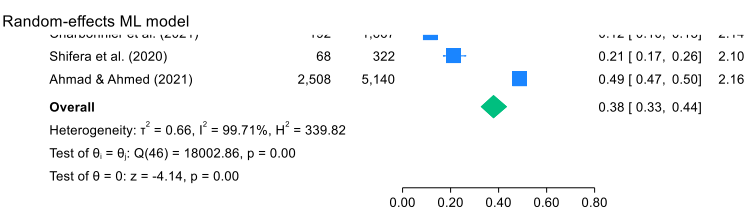
**Figure 2.** Pooled estimate of the proportion of college students with clinically significant symptoms of anxiety (Period 1 vs. Period 2).



**Figure 3.** Pooled estimate of the proportion of college students with clinically significant symptoms of depression (period 1 vs period 2).



**Figure 4.** Pooled estimate of the proportion of college students with clinically significant symptoms of stress (period 1 vs period 2).



Random-effects ML model

**Table 1.** Logit transformed proportions.

	<b>Period 1</b>				<b>Period 2</b>			
	Proportion	IC95% Li	IC95% Ls	<i>K</i>	Proportion	IC95% Li	IC95% Ls	<i>K</i>
<b>Anxiety</b>	0.34	0.29	0.39	61	0.37	0.32	0.42	15
<b>Depression</b>	0.38	0.33	0.44	47	0.31	0.23	0.41	14
<b>Stres</b>	0.54	0.46	0.62	27	0.41	0.25	0.59	8

## Artículos fundamentales

### 2. Artículo 2:

Jiménez-Villamizar, M. P., Muro, A., Navarro, J.-B., Carmona, M., Cladellas, R., Feliu-Soler, A., Reche-Camba, E., López-Fernández, D., Méndez-Ulrich, J. L., Selva, C., & Sanz, A. (2023). Predictive factors of the psychological impact of the COVID-19 pandemic on university students: A study in six Ibero-American countries. *Ansiedad y Estrés*, 29(3), 153–162. <https://doi.org/10.5093/ANYES2023A19>

Original

## Predictive factors of the psychological impact of the COVID-19 pandemic on university students: a study in six Ibero-American countries

María Paola Jiménez-Villamizar<sup>1</sup>, Anna Muro-Rodríguez<sup>1</sup>, José-Blas Navarro<sup>2</sup>, Meritxell Carmona-Cervelló<sup>1</sup>, Ramon Cladellas<sup>1</sup>, Albert Feliu-Soler<sup>3</sup>, Elvira Reche-Camba<sup>1</sup>, Daniel López-Fernández<sup>4</sup>, Jorge Luis Méndez-Ulrich<sup>5</sup>, Clara Selva<sup>6</sup> and Antoni Sanz<sup>1</sup>

<sup>1</sup> Department of Basic, Developmental and Educational Psychology

<sup>2</sup> Department of Psychobiology and Methodology of Health Sciences

<sup>3</sup> Department of Clinical and Health Psychology

<sup>4</sup> Faculty of Health Sciences

<sup>5</sup> Department of Methods of Research and Diagnosis in Education

<sup>6</sup> Open University of Catalonia

## ARTICLE INFO

## Article history:

Received 27 June 2023

Accepted 20 November 2023

## Keywords:

Covid-19  
University students  
Mental health  
Distress

## Palabras clave:

Covid-19  
Estudiantes universitarios  
Salud mental  
Angustia

## A B S T R A C T

**Background/Objective:** During Covid-19, high prevalences of anxiety and depression were reported among university students, suggesting that they may be at higher risk than the general population of developing psychological disorders in lockdown situations. This study aimed to analyze how sociocultural factors and individual differences contributed to explaining the psychological impact of the pandemic among Ibero-American university students from Argentina, Colombia, Ecuador, Spain, Mexico, and Uruguay. **Method:** The study was carried out on 7601 university students (72% women). Data were collected through an online questionnaire that measured anxiety (GAD-2), depression (PHQ-2), somatic symptoms (SSQ-5), post-traumatic growth (PTGI), loneliness (UCLS), personality (NEO-FFI), Resilience (CD-RISC-2), Perceived Competences (PCS) and sociodemographic data. Descriptive statistics and multiple linear regression model were performed. **Results:** Analysis indicated a high prevalence (46.15%) of distress among university students, regardless of country and significantly higher than in the general population (28.27%). Greater feelings of loneliness and greater neuroticism were significantly associated with anxiety, depression, and somatization. Likewise, male gender and higher levels of resilience were found to be protective factors, while post-traumatic growth was also higher in men and was associated with higher levels of resilience, perceived competence, and responsibility. **Conclusions:** The results suggest the need to consider individual risk factors such as being a woman, presenting higher levels of neuroticism and loneliness in understanding the psychological impact of the pandemic on university students. It is concluded that universities should offer specific interventions to address mental health problems and manage the added complications of crisis events on the health of students.

### Factores predictivos del impacto psicológico de la pandemia de COVID-19 en estudiantes universitarios: un estudio en seis países iberoamericanos

## R E S U M E N

**Antecedentes/Objetivo:** Durante el Covid-19, se informaron altas prevalencias de ansiedad y depresión entre estudiantes universitarios, lo que sugiere que pueden tener un mayor riesgo que la población general de desarrollar trastornos psicológicos en situaciones de encierro. Este estudio tuvo como objetivo

\* Corresponding author.

E-mail address: [mariapaola.jimenez@autonoma.cat](mailto:mariapaola.jimenez@autonoma.cat) (M. P. Jiménez-Villamizar); [anna.muro@uab.cat](mailto:anna.muro@uab.cat) (A. Muro-Rodríguez).

<https://doi.org/10.5093/anyes2023a19>

1134-7937/© 2023 Sociedad Española para el Estudio de la Ansiedad y el Estrés - SEAS. Colegio de la Psicología de Madrid. Todos los derechos reservados.

analizar cómo los factores socioculturales y las diferencias individuales contribuyeron a explicar el impacto psicológico de la pandemia entre estudiantes universitarios iberoamericanos de Argentina, Colombia, Ecuador, España, México y Uruguay. *Método:* El estudio se realizó en 7601 estudiantes universitarios (72% mujeres). Los datos fueron recolectados a través de un cuestionario en línea que midió ansiedad (GAD-2), depresión (PHQ-2), síntomas somáticos (SSQ-5), crecimiento postraumático (PTGI), soledad (UCLS), personalidad (NEO-FFI), Resiliencia (CD-RISC-2), Competencia Percibida (PCS) y datos sociodemográficos. Se realizó estadística descriptiva y modelo de regresión lineal múltiple. *Resultados:* Los análisis indicaron una alta prevalencia (46,15%) de angustia entre los estudiantes universitarios, independientemente del país y significativamente mayor que en la población general (28,27%). Mayores sentimientos de soledad y mayor neuroticismo se asociaron significativamente con ansiedad, depresión y somatización. Asimismo, el género masculino y mayores niveles de resiliencia resultaron ser factores protectores, mientras que el crecimiento postraumático también fue mayor en los hombres y se asoció con mayores niveles de resiliencia, competencia percibida y responsabilidad. *Conclusiones:* Los resultados sugieren la necesidad de considerar factores de riesgo individuales como ser mujer, presentar mayores niveles de neuroticismo y soledad en la comprensión del impacto psicológico de la pandemia en estudiantes universitarios. Se concluye que las universidades deben ofrecer intervenciones específicas para abordar los problemas de salud mental y manejar las complicaciones añadidas de los eventos de crisis sobre la salud de los estudiantes.

## Introduction

As the global COVID-19 pandemic unfolded, numerous studies conducted between 2020 and 2022 highlighted the widespread negative psychological impact on the general population (Brooks et al., 2020; Gloster et al., 2020; Sanabria-Mazo et al., 2021). Stringent measures, such as social distancing, mobility restrictions, complete lockdowns, and quarantines, were implemented to contain the spread of the pandemic, forcing citizens to stay at home for months. The large number of infected patients and deaths, the uncertainty about the future, concerns about becoming infected or infecting others, or the disruption to daily routines emerged as stressors that affected mental health. Several studies reported that factors such as youth (Benatov et al., 2022), female gender, personality traits including neuroticism, and longer confinements were risk factors for distress (Muro et al., 2021; Otten et al., 2021). The psychological impact of the pandemic was influenced by the duration of the restrictions (Brooks et al., 2020; Castellà & Muro, 2022), a factor that also varied among countries. There was a notable heterogeneity in the reported prevalence of distress, ranging from 8% to 75% depending on the country (Adamson et al., 2020; Benatov et al., 2022; Campo et al., 2021; Gloster et al., 2020; Xiong et al., 2020).

Higher education was one of the sectors most profoundly impacted by these abrupt changes, with universities and colleges closing their doors and swiftly shifting to online teaching methods, disrupting the daily routines of students and academic staff (Alomyan, 2021; De Boer, 2021). By early 2020, over 1.5 billion students worldwide were affected by the lockdowns (UNESCO, 2020). In response to the disruptions, universities transitioned from traditional to online teaching, presenting new challenges for the university community, particularly students. In particular, they had to adapt to unfamiliar learning methods, deal with technological challenges, and navigate changes in assessment formats, among other difficulties (Mateo et al., 2023). Although universities reorganized to address the challenges of online teaching, the mental health of college students during the COVID-19 outbreak underwent significant changes (Aristovnik et al., 2020). A substantial number of university students reported experiencing depressive and somatic symptoms, stress, and anxiety. Moreover, most studies suggest that loneliness, health concerns, and financial uncertainty were major predictors of distress (Gloster et al., 2020; Solomou & Constantinidou, 2020; Zhai & Dub, 2020). Similar phenomena were observed in previous epidemics, such as SARS (Main et al., 2011). Approximately 30% of university students presented symptoms

of somatization, including fear related to the thought of infection, engaging in the physical exploration of symptoms, along with reading and discussing possible symptoms (Egoavil et al., 2021; Kecejevic et al., 2020; Morales et al., 2020; Sánchez et al., 2021). These behaviors contributed to more severe conditions related to depression and anxiety, leading to the increased utilization of healthcare systems (Schlarb et al., 2017).

While extensive analyses have explored differences between countries within the general global population in the context of the COVID-19 pandemic (Nochaiwong et al., 2021), fewer specific studies have focused on the university population to evaluate the psychological impact of the crisis. These studies have revealed significant variations in the prevalence of depression and anxiety, ranging from 14% to 56%. This diversity suggests that individual and cultural differences play a crucial role in explaining this observed heterogeneity (Appleby et al., 2022; Musa et al., 2020; Ochnik et al., 2021; Yehudai et al., 2020). For instance, some studies suggest that the emotional and psychological impact has been more pronounced in Arab and Latin American countries (Moret & Murphy, 2022; Ruiz et al., 2022). Independent studies conducted within the university population also highlight variations between Latin American countries, with the prevalence of distress ranging from 8% to 11% among Argentine students (Leonangeli et al., 2022), 33% and 34% in the case of Colombia and Ecuador (Arévalo & Vega, 2022; Ochnik et al., 2021), 42% in Mexico (Cortés & Vuelvas, 2022) and 52% in Spain (Marques et al., 2021). Notably, these countries implemented similar measures during the reopening of higher education institutions. However, differences in economic and health development, as well as the population's confidence in the health measures, could influence this differential impact (Wang et al., 2020). Consequently, variations in prevalence could be attributed to the distinct measures adopted by each country to mitigate the spread of the virus, as well as methodological inconsistencies related to the quality of the studies, the instruments used, and the interpretation of the data (Sun et al., 2023).

Similarly, individual differences have played a pivotal role in the psychological response to mobility restriction measures (Ceccato et al., 2021; Modersitzki et al., 2020; Muro et al., 2021), as they serve as predictors of personal cognitive-behavioral regulation strategies that can influence both physical and emotional well-being. Neuroticism and low perceived competence have been identified as predictive of heightened worry and negativism during a pandemic (Kroencke et al., 2020; Garbe et al., 2020). These traits are also associated with increased feelings of loneliness, along with

lower well-being and life satisfaction (Gubler et al., 2021). In a study involving Polish and Ukrainian university students, higher levels of neuroticism were observed in women and were correlated with greater burnout (Długosz & Kryvachuk, 2021). Moreover, elevated levels of neuroticism were linked to increased feelings of loneliness (Labrague et al., 2021; Torres et al., 2022) and showed a stronger association with depressive symptomatology, greater difficulties in emotional regulation, and lower levels of social support and resilience during the pandemic (Jeste et al., 2020; Labrague et al., 2021; Torres et al., 2022).

However, the pandemic saw not only the emergence of distress but also new coping skills that facilitated posttraumatic growth (PTG), resilience, perceived competence, and responsibility (Vázquez et al., 2021). These factors are considered protective against the distress generated by the restriction measures and the health threat posed by the spread of the virus (Lechner et al., 2020; Nowicki et al., 2020).

Globally, there is growing interest in promoting well-being through initiatives that address global challenges, such as the 2030 Agenda for Sustainable Development (United Nations, 2022) and the creation of healthy educational and academic environments (World Health Organization, 2022). This interest is particularly directed toward the young population due to the impact of COVID-19, with a focus on increasing psychosocial support in universities and reducing the risk of psychological distress (Mattijssen et al., 2021). Consequently, universities have initiated the implementation of wellness programs (Copeland et al., 2021; Muro et al., 2022), although there is a recognized need for greater institutional investment for the sustainable implementation of these programs, as they often rely on resources from projects and grants (Kismihok et al., 2022; Metcalfe et al., 2022). Studies such as this one contribute toward exploring the psychological impact of the pandemic among university students in Ibero-American countries, which are among the most affected worldwide (Moret & Murphy, 2022; Ruiz et al., 2022). This research reinforces the importance of envisioning and implementing wellness programs in educational contexts (Morgan & Simmons, 2021).

Consequently, this study aimed to analyze the extent to which sociocultural factors and individual differences contribute to explaining the variability in the psychological impact of the pandemic among Ibero-American university students. Additionally, we compared the incidence of mental health disorders between university students and a sample of the general population from these same countries to elucidate the relevance of individual differences in predicting the differential psychological responses to the pandemic.

We hypothesized that college students would experience higher levels of psychological distress than the general population during the COVID-19 pandemic. Furthermore, we focused on examining how individual differences are related to distress, somatization, and post-traumatic growth in college students, moderated by country. These hypotheses were based on the findings reported in previous research. However, they were tentative, given certain inconsistencies, limitations in moderation testing, and uncertainties regarding the effects of the pandemic.

## Materials and methods

### Method

The current study is an analytical observational research project derived from the PSY-COVID project (Sanabria-Mazo et al., 2021) involving the distribution of an anonymous online survey

coordinated by the Autonomous University of Barcelona, Spain. It was conducted across 32 countries (13 in the Americas, 11 in Europe, 4 in Asia, and 4 in Africa) and involved more than 150 international researchers from 56 scientific institutions. This article specifically presents and analyzes the results related to university students during the period of confinement.

### Participants

For the present study, data from 58750 participants were analyzed. The final sample consisted of 7539 participants from six Ibero-American countries: Argentina ( $N = 695$ ), Colombia ( $N = 3125$ ), Ecuador ( $N = 173$ ), Mexico ( $N = 750$ ), Spain ( $N = 2401$ ), and Uruguay ( $N = 395$ ), which formed a significant sample of university students. The initial number of participants was 7683, of which 144 were excluded because they were under 18. The general population sample consisted of 51211 participants (62.2% female) aged 18-99 years, representing the same six countries as the student sample and showing a comparable distribution by country.

### Instruments

**Distress:** Participants completed the Patient Health Questionnaire-2 (PHQ-2) (Kroenke et al., 2003), which explores the risk of depressive disorder and is the ultra-brief version of the PHQ-9. The PHQ-2 consists of two 4-point Likert scale items, where 0 corresponds to “not at all” and 3 to “almost every day”. The total score ranges from 0 to 6. In addition, participants also completed the Generalized Anxiety Disorder Scale (GAD-2), which evaluates the risk of anxiety disorder by measuring anxiety symptoms, which is the ultra-brief version of the GAD-7 (Löwe et al., 2010). The GAD-2 consists of two items with a 4-point Likert-type response format, where 0 corresponds to “not at all” and 3 to “almost every day”. The total score on the GAD-2 ranges from 0 to 6. Participants were at risk of anxiety if the GAD-2 score was 3. Given that depression and anxiety scores were strongly correlated ( $r = .64, p < .001$ ), a composite distress score was created by summing the scores of the four individual items, with a cutoff score of 3. The PHQ-2 and GAD-2 presented good psychometric properties in previous studies (Byrd-Bredbenner et al., 2021; Coakley et al., 2022; Heumann et al., 2023; Sapra et al., 2020). The internal consistency in this study was assessed with Cronbach's  $\alpha$ , yielding a score of .85.

**Somatic Symptoms:** The Somatic Symptoms Questionnaire (SSQ-5; Nomura et al., 2007) measures somatic symptoms. It was developed by the authors of the PSY-COVID questionnaire, considering the results of the meta-analysis by Zijlema et al. (2013) on scales measuring somatization. This instrument contains five items with a 4-point Likert-type response format where 0 corresponds to “not at all” and 3 to “almost every day”. The total score of the SSQ-5 ranges from 0 to 15, with higher scores indicating higher somatization. Participants were at risk of somatization if the SSQ-5 score was 5. A Cronbach's  $\alpha$  of .76 demonstrated internal consistency in this study.

**Posttraumatic Growth:** The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), in its original version, consists of 10 questions. A unidimensional Principal Component Analysis evaluated the five questions with the highest factorial saturation in this adaptation. This scale addresses relationships with others, new possibilities, personal strength, spiritual change, and appreciation for life. Respondents choose from four response options: “not at all”, “a little”, “quite a bit”, and “a lot”. Total scores ranged from 0 to 15, with higher scores indicating greater posttraumatic growth. Internal

consistency for this study, measured by Cronbach's  $\alpha$ , was .82.

**Loneliness:** The item with the highest factorial load on the loneliness scale (UCLS; Russell et al., 1978) was used to measure loneliness. Respondents used a four-point scale with options ranging from 0 to 3: "never, some days, more than half of the days, and almost every day". Scores ranged between 0 and 3, with higher scores indicating greater feelings of loneliness.

**Personality traits:** The NEO Five-Factor Inventory (NEO-FFI; McCrae & Costa, 2004) was used to measure the five personality dimensions, using the item with the highest factor saturation for each dimension. In the present investigation, only neuroticism and responsibility were used, with five response options ranging from -2 to +2: "Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree". Higher values indicate greater traits in each personality dimension assessed.

**Resilience:** The short version of the Connor-Davidson Resilience Scale (CD-RISC-2; Vaishnavi et al., 2007) assessed resilience as the ability to bounce back and adapt successfully to change. This scale comprises two items with four response options: "nothing =0, a little=1, quite a lot=2, and a lot=3". The total score ranges from 0 to 6, with higher scores indicating greater resilience. Given the low internal consistency (Cronbach's  $\alpha = .70$ ), a separate analysis of the two items, namely "capacity to adapt" and "capacity to recover from illness," was conducted for the present study.

**Perceived competence:** The item with the highest factorial load ("I can achieve what I set out to do") of the Perceived Competence Scale (PCS) (Fernández et al., 1998) was used to measure perceived competence. This item has five response options: "Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree", with scores ranging between -2 and 2. Higher scores indicate greater perceived competence.

The online survey and standardized questionnaires included a sheet to collect specific sociodemographic data from the students (Table 1). A single question was asked to assess the absolute and comparative confinement levels: approximately how often have you left the house?

**Procedure**

A group of international researchers conducted this study to generate a dataset of psychosocial aspects of the COVID-19 pandemic. The PSY-COVID project was carried out across different stages. In the first stage, the assessment instrument was developed and validated by a panel of 30 international researchers from 8 countries, all experts in clinical psychology and public health. After the linguistic and content validation, the usability test of the online survey was also carried out to ensure comprehension of the questions. The second phase consisted of a field study where

the online questionnaire was disseminated worldwide using the snowball method, with a completion time of approximately 15 minutes. The survey was distributed mainly through social networks (Facebook, Instagram, WhatsApp, Twitter, etc.), media (newspapers, television, radio, etc.), and institutional contacts (universities, foundations, health organizations, etc.). A total of 88734 people participated in the study worldwide.

The data obtained correspond to the first wave of COVID-19, collected between May and August 2020 in six countries: Colombia (from May 20 to June 19), Spain (from May 14 to June 21), Argentina (from July 13 to August 13), Mexico (from June 14 to July 2), Uruguay (from July 10 to August 8) and Ecuador (from June 15 to July 31).

The online survey included consent to participate in the study and statements on data protection laws. This study was approved by the Ethical Committee on Animal and Human Experimentation of the Autonomous University of Barcelona (CEEAH-5197). All procedures followed the ethical standards in the 1964 Declaration of Helsinki and subsequent updates.

**Statistical analyses**

All statistical analyses were conducted with Stata 17 on a dataset extracted from the PSY-COVID study (available at <https://figshare.com/s/4997cfc605c496da1a0a>). To preserve the population distribution based on gender and nationality, the analysis of the global sample data was weighted by within-country gender distribution and total country population. Analyses segmented by country were weighted only by gender. The description of gender distribution was the only unweighted analysis.

A comparison of means for mental health outcomes (anxiety, depression, and somatization) between students and the general population was conducted using Student's *t*-test. Cohen's *d*-effect size was calculated for each comparison of means. Following Cohen's (1992) guidelines, absolute values were interpreted as a null effect for values < 0.20, a small effect for values from 0.20 to 0.50, a medium effect for values from 0.50 to 0.80, and a large effect for values > 0.80. Additionally, distress and somatization variables were dichotomized based on the cut-off points explained in the instruments section. This allowed for a prevalence comparison between students and the general population using the chi-square test, with Pearson's contingency coefficient serving as an indicator of effect size.

Predictive models for each of the three mental health outcomes were initially estimated with multilevel linear mixed models. Following Snijders and Bosker (2012), a multilevel random intercept was initially estimated with the country as a random factor and restricted maximum likelihood. Intraclass correlation (ICC) was then calculated for the three mental health outcomes.

**Table 1.** Sociodemographic characteristics of university students

	Total N=7539	Argentina N=695	Colombia N=3125	Ecuador N=173	Mexico N=750	Spain N=2401	Uruguay N=395	
Age	M = 25.02 (SD = 7.69)	M = 25.58 (SD = 6.59)	M = 22.95 (SD = 5.03)	M = 24.33 (SD = 5.43)	M = 26.25 (SD = 9.08)	M = 23.36 (SD = 6.60)	M = 28.85 (SD = 9.60)	
	%	%	%	%	%	%	%	
Gender <sup>a</sup>	Female	72.26	77.55	71.90	20.81	75.47	72.97	77.97
	Male	27.74	22.45	28.10	79.19	24.53	27.03	22.03
Leaving home	Less than twice a month	50.46	37.67	64.71	50.67	50.08	50.74	16.39
	Twice or more a month	49.54	62.33	35.29	49.33	49.92	49.26	83.61
Income	Low	35.27	35.31	41.34	37.62	24.49	57.72	30.55
	Medium+High	64.73	64.69	58.66	62.38	75.51	42.28	69.45

<sup>a</sup> non-weighted.

**Table 2.** Descriptive mental health of university students

	Total N = 7539	Argentina N = 695	Colombia N = 3125	Ecuador N = 173	Mexico N = 750	Spain N = 2401	Uruguay N = 395
	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)
Loneliness (0-3)	1.07(1.04)	1.15(1.08)	1.11(1.06)	1.02(0.96)	1.04(1.03)	1.07(0.10)	0.66(0.88)
Neuroticism (1-5)	3.18(1.12)	3.35(1.07)	3.11(1.13)	2.10(1.07)	3.16(1.12)	3.26(1.16)	3.12(1.10)
Responsibility (1-5)	3.51(1.03)	3.55(1.03)	3.36(1.06)	3.80(0.94)	3.51(1.00)	3.53(1.11)	3.53(0.96)
Illness recovery capacity (0-3)	2.28(0.59)	2.41(0.60)	2.23(0.61)	2.09(0.59)	2.26(0.56)	2.32(0.58)	2.33(0.57)
Adaptability (0-3)	2.19(0.66)	2.21(0.65)	2.16(0.69)	2.12(0.70)	2.20(0.65)	2.22(0.66)	2.27(0.64)
Perceived competence (1-5)	3.99(0.84)	3.97(0.80)	3.98(0.89)	3.90(0.94)	4.05(0.83)	3.91(0.83)	4.01(0.78)
Distress (0-6)	2.73(1.58)	2.82(1.54)	2.64(1.63)	2.75(1.52)	2.69(1.57)	2.91(1.63)	2.09(1.46)
Somatization (0-15)	3.79(2.89)	3.90(2.82)	4.17(3.06)	4.56(3.78)	3.41(2.69)	4.04(2.79)	3.22(2.44)
Post-traumatic growth (0-15)	7.45(3.42)	6.69(3.44)	7.85(3.47)	9.7(3.01)	7.72(3.21)	6.16(3.37)	7.07(3.51)

The ICC associated with distress as an outcome was  $ICC = .013$  (95% CI = .001 to .193); with somatization, this was  $.019$  (95% CI = .007 to .049); and with posttraumatic growth this was  $.108$  (95% CI = .036 to .283). Given the low variability of results by country, the multilevel approach was discarded, and the most parsimonious linear regression model was selected. Therefore, separate multiple linear regression models were estimated using loneliness, neuroticism, responsibility, resilience, perceived competence, and home abandonment as predictors and the three mental health predictors (distress, somatization, and posttraumatic growth) as outcomes. All models were adjusted for age and socioeconomic status.

## Results

### Sociodemographic and psychological characteristics

The study participants were 7,539 university students aged between 18 and 65, with a mean age of 25.02 years ( $SD = 7.69$ ). The majority of participants were female (72.26%). Regarding isolation measures, most participants (50.46%) reported going out to outdoor spaces once or not at all every 15 days. In contrast, Argentine (62.33%) and Uruguayan (83.61%) students reported going out two or more times in less than 15 days (Table 1).

Concerning the psychological characteristics of the sample, Table 2 describes the whole sample, with separate details for each country.

### Mental health in University students vs. the general population

The mean scores for the three mental health outcomes were compared between the sample of university students and the general population (Table 3).

The mean distress score in university students was 0.58 points higher than that of the general population ( $|t| = 30.98$ ,  $p < .001$ ) with a moderate effect size ( $d = 0.38$ ). For somatization, the general population mean ( $M = 3.03$ ,  $SD = 2.66$ ) was lower than that of university students ( $M = 3.79$ ,  $SD = 2.89$ ) with a small effect size ( $|t| = 30.98$ ,  $p < .001$ ,  $d = 0.28$ ). Regarding post-traumatic growth, a higher mean score was observed for the non-student population ( $M = 8.17$ ,  $SD = 3.38$ ) compared to the student sample ( $M = 7.45$ ,  $SD = 3.42$ ) with a small effect size ( $|t| = 17.03$ ,  $p < .001$ ,  $d = 0.21$ ).

The prevalence of distress was higher in university students than in the general population (46.2% vs. 28.3%;  $\chi^2 = 998.10$ ;  $p < .001$ ;  $C = .129$ ). The same pattern occurred with somatization, with a higher prevalence observed in university students than in the general population (39.8% vs. 26.7%;  $\chi^2 = 563.1$ ;  $p < .001$ ;  $C = .097$ ).

**Table 3.** Comparison of mental health outcomes between university students and non-students

	Students	N	M	SD	t	p	d
Distress (0-6)	No	51211	2.15	1.50	30.98	< .001	0.38
	Yes	7539	2.73	1.58			
Somatization (0-15)	No	51211	3.03	2.66	22.78	< .001	0.28
	Yes	7539	3.79	2.89			
Post-traumatic growth (0-15)	No	51211	8.17	3.38	17.03	< .001	0.21
	Yes	7539	7.45	3.42			

### Predictors of mental health outcomes

Table 4 presents the results of multiple linear regression models. The predictors explained 48% of the variance in distress, with the strongest being loneliness ( $\beta = 0.45$ ,  $p < .001$ ), neuroticism ( $\beta = 0.32$ ,  $p < .001$ ), gender ( $\beta = -0.09$ ,  $p < .001$ ), and adaptability ( $\beta = -0.08$ ,  $p < .001$ ).

The predictors explained 23% of the variance in somatization, with loneliness ( $\beta = 0.26$ ,  $p < .001$ ), neuroticism ( $\beta = 0.20$ ,  $p < .001$ ), male gender ( $\beta = -0.20$ ,  $p < .001$ ), and resilience to disease ( $\beta = -0.11$ ,  $p < .001$ ) being the most significant.

The predictors explained 15% of the variance in post-traumatic growth, with male gender ( $\beta = -0.13$ ,  $p < .001$ ), perceived competence ( $\beta = 0.13$ ,  $p < .001$ ), responsibility ( $\beta = 0.12$ ,  $p < .001$ ), loneliness ( $\beta = -0.12$ ,  $p < .001$ ), neuroticism ( $\beta = -0.08$ ,  $p < .001$ ) and leaving the house more frequently ( $\beta = 0.04$ ,  $p = .02$ ) having the greatest impact.

## Discussion

The present study investigated cultural and individual predictors of the psychological impact of the COVID-19 pandemic among university students from six Ibero-American countries. This is the first cross-cultural study to include an extensive student cohort, comparing it with a large general population and including cultural and individual determinants. The findings support the hypothesis that the psychological impact of the COVID-19 pandemic within this demographic surpasses that of the general population. Specifically, 46.2% of students showed notable symptoms of distress, while 39.8% showed somatization symptoms – a prevalence significantly higher than that observed in the general population (with reports estimating 28.3% for distress and 26.7% for somatization symptoms). These results are consistent with previous studies, highlighting undergraduate students' vulnerability to the pandemic's psychological impact (Werner et al., 2021). Notably, the extended duration of the restrictions at the university level, in comparison with other educational levels and the broader population,

**Table 4.** Predictive model of mental health outcomes and individual differences of university students

Distress	Total (= .48)				Argentina (=.44)	Colombia (=.51)	Ecuador (=.54)	Mexico (=.49)	Spain (=.45)	Uruguay (=.51)
	<i>B</i>	CI 95% ( <i>B</i> )	<i>p</i>	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	<i>B</i>
Loneliness (0-3)	0.69	[0.63; -0.74]	<.001	0.45	0.48	0.45	0.46	0.45	0.41	0.45
Neuroticism (1-5)	0.45	[0.41; -0.50]	<.001	0.32	0.27	0.31	0.36	0.33	0.33	0.30
Male gender	-0.28	[-0.37; -0.18]	<.001	-0.09	-0.11	-0.08	-0.09	-0.08	-0.07	-0.14
Adaptability (0-3)	-0.18	[-0.27; -0.10]	<.001	-0.08	-0.08	-0.10	-0.10	-0.07	-0.08	-0.14
Perceived competence (1-5)	-0.08	[-0.16; -0.004]	.039	-0.04	-0.04	-0.03	-0.22	-0.03	-0.04	0.03
Responsibility (1-5)	-0.06	[-0.11; -0.0004]	.049	-0.04	-0.05	-0.08	0.05	-0.02	-0.06	0.01
Leaving home $\geq 2$ times/month	-0.09	[-0.18; 0.01]	.068	-0.03	-0.01	-0.02	-0.17	-0.03	-0.01	-0.07
Illness recovery capacity (0-3)	-0.02	[-0.11; 0.07]	.669	-0.01	-0.04	-0.02	0.07	0.01	-0.01	0.09
Somatization	Total (= .23)				Argentina (=.22)	Colombia (=.28)	Ecuador (=.36)	Mexico (=.21)	Spain (=.27)	Uruguay (=.26)
	<i>B</i>	CI 95% ( <i>B</i> )	<i>p</i>	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	<i>B</i>
Loneliness (0-3)	0.72	[0.61; 0.84]	<.001	0.26	0.24	0.27	0.29	0.27	0.27	0.20
Neuroticism (1-5)	0.53	[0.43; 0.62]	<.001	0.20	0.21	0.23	0.25	0.18	0.26	0.24
Male gender	-1.16	[-1.37; -0.95]	<.001	-0.20	-0.22	-0.21	-0.26	-0.19	-0.19	-0.24
Illness recovery capacity (0-3)	-0.55	[-0.75; -0.35]	<.001	-0.11	-0.17	-0.08	0.12	-0.11	-0.14	0.08
Leaving home $\geq 2$ times/month	-0.14	[-0.35; 0.07]	.190	-0.02	-0.02	0.02	-0.23	0.001	-0.03	-0.07
Responsibility (1-5)	-0.04	[-0.16; 0.08]	.562	-0.01	-0.01	-0.05	-0.12	0.001	-0.01	-0.05
Perceived competence (1-5)	-0.03	[-0.19; 0.13]	.693	-0.01	-0.001	0.04	0.13	-0.002	0.02	0.08
Adaptability (0-3)	-0.001	[-0.17; 0.16]	.989	-0.0003	0.03	-0.02	-0.13	-0.01	0.03	-0.04
Post-traumatic growth	Total (= .15)				Argentina (=.15)	Colombia (=.23)	Ecuador (=.23)	Mexico (=.14)	Spain (=.15)	Uruguay (=.11)
	<i>B</i>	CI 95% ( <i>B</i> )	<i>p</i>	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	<i>B</i>
Adaptability (0-3)	0.69	[0.47; 0.92]	<.001	0.13	0.23	0.09	0.27	0.12	0.10	0.17
Male gender	-0.89	[-1.15; -0.63]	<.001	-0.13	-0.12	-0.15	-0.26	-0.12	-0.17	-0.15
Perceived competence (1-5)	0.52	[0.35; 0.70]	<.001	0.13	0.12	0.18	0.08	0.09	0.16	0.17
Responsibility (1-5)	0.41	[0.27; 0.55]	<.001	0.12	0.11	0.17	0.14	0.12	0.11	0.03
Loneliness (0-3)	-0.39	[-0.52; -0.27]	<.001	-0.12	-0.07	-0.17	-0.01	-0.14	-0.16	-0.07
Neuroticism (1-5)	-0.24	[-0.36; -0.13]	<.001	-0.08	-0.06	-0.07	-0.16	-0.09	0.03	0.04
Leaving home $\geq 2$ times/month	0.30	[0.05; 0.56]	.019	0.04	0.03	0.03	-0.01	0.11	0.05	0.10
Illness recovery capacity (0-3)	-0.02	[-0.25; 0.21]	.866	-0.003	0.01	0.04	0.02	0.06	-0.01	-0.10

Note. *B* = standardized regression coefficient; Adjusted for age and income level.

contributed to this vulnerability (Adamson et al., 2020; Brailovskaia & Margraf, 2020; Nochaiwong et al., 2021; Wang et al., 2020). Across the countries evaluated, the overall prevalence of distress (46.15%) exceeded estimates from other European cross-cultural studies, which reported a prevalence of around 25% (Ochnik et al., 2021). Consequently, it is confirmed that university students constitute a demographic that is susceptible to experiencing a higher mental health impact during pandemic-related restrictions.

Concerning transculturality, the observed differences between countries were not statistically significant, suggesting an absence of cultural variations in the psychological impact of the pandemic, at least in the higher education environments of the countries analyzed here, that is, those within the Ibero-American region (Marques et al., 2021). This finding can be interpreted in light of the parallel measures adopted by the participating countries to prevent the spread of infection (OECD, 2020; University of Oxford, 2022), including the closure of the education sector in March 2020 and the gradual resumption of activities according to the behavior of the virus. Notably, face-to-face attendance was partially resumed at universities in mid-2021, accompanied by containment measures such as limited seating, mask usage, and hand sanitization (Pérez-Anaya et al., 2021). This convergence of findings in culturally diverse contexts implies the existence of common factors that affect university students equally (Al-Tammemi et al., 2020; Eskin et al., 2016). This homogeneity could be explained by the shared educational context: the university and its surrounding

environment show similarities in Ibero-American countries. Therefore, subsequent developments could have a similar influence, potentially homogenizing cultural differences across countries. Such uniformity is advantageous from an academic standpoint, as it suggests that, for students to achieve their learning potential, the same set of resources or tools (teachers, peers, technology, etc.) is used in all countries (Diaz et al., 2022). This emphasizes the importance of environmental similarities across universities over the potential cultural and health disparities between countries (CRUE, 2020; Kleiman et al., 2020).

Finally, it was proposed that individual differences would be significantly related to distress, somatization, and post-traumatic growth and moderated by the country of origin. Regarding gender, previous results are confirmed, indicating that women suffer a greater psychological impact. This impact could be explained by psychosocial variables such as traditional roles in sharing household and parenting tasks, which were intensified among women during confinement (Otten et al., 2021). Additionally, differences in levels of trait neuroticism, consistently observed to be higher in women than in men, could contribute to this impact. Regression analyses further indicated that higher levels of neuroticism and loneliness, coupled with lower levels of resilience, were predictors of greater distress and somatization. Notably, these factors were also inversely associated with post-traumatic growth.

The elevated levels of distress observed among university students, along with symptoms of anxiety and depression, may

be attributed to both the prolonged duration of restrictions for this group compared to the rest of the population and the altered developmental needs that likely influenced their behavioral and emotional responses to the pandemic containment measures. This differential impact is notably associated with higher levels of loneliness, neuroticism, and lower levels of resilience (adaptability to changes). Neuroticism emerges as a particularly significant predictor of distress, consistent with findings from previous studies conducted both during the pandemic and in pre-pandemic contexts, where its inverse relationship with physical and mental health is well established (Friedman, 2019; Mattson et al., 2018). Higher neuroticism predisposes individuals to experience heightened physiological and sympathetic nervous system activation, more negative feelings and thoughts, increased emotional instability and isolation, a reduced capacity to face crises and life events, and lower adaptiveness to new situations.

Consistent with previous studies conducted on the general population (Adamson et al., 2020; Brailovskaia & Margraf, 2020; Nochaiwong et al., 2021; Wang et al., 2020), our results highlight how loneliness predicts greater distress and somatization symptoms. The absence of physical companionship during confinements, isolation, and distancing measures triggered both psychological and physical symptoms, such as headache, dizziness, back pain, or shortness of breath. This, coupled with the overwhelming information about the symptoms of the virus, might have led many students to mistakenly believe that they had been infected (Sun et al., 2021), contributing to greater emotional instability and fear of getting sick or dying (Egoavil et al., 2021; Keckojevic et al., 2020; Morales et al., 2020; Sánchez et al., 2021).

As anticipated, higher resilience levels considered a protective individual factor against crises and psychosocial stressors (Labrague, 2021; Vázquez et al., 2021), have proven to be a fundamental variable for better psychological adaptation during the pandemic, safeguarding the mental health of students. Resilience enables the more effective management of academic demands and facilitates the development of coping strategies in the face of environmental pressures. This suggests that the absence of resilience exacerbates distress, hinders performance, and impedes optimal environmental adaptation (Pidgeon et al., 2014). In a similar vein, it has been confirmed that PTG (posttraumatic growth), perceived competence, and responsibility contribute to better coping with the challenges associated with the restrictions (Nowicki et al., 2020).

### Limitations and future research

While this study presents an important strength regarding the sample size, it is not without limitations. First, its cross-sectional nature precludes the establishment of temporal or causal relationships between the analyzed variables. Additionally, the non-probabilistic sampling method could compromise both the external and internal validity of the results, limiting the generalization of the findings. However, it is important to emphasize that the survey was constructed using previously validated instruments, and highly rigorous analyses were employed to ensure adequate internal validity. Nevertheless, using short instruments designed ad-hoc for the study could introduce false positives and negatives. Therefore, it is recommended to verify the identified cases using more comprehensive and specialized questionnaires or individual clinical interviews. Future studies should adopt longitudinal designs that allow for identifying causal relationships between variables and their covariation over time (Lisnyj et al., 2022), given the dynamic nature of pandemics and

health restrictions in terms of duration and intensity. Additionally, future research should analyze diverse countries with varying contextual, health, economic, and social characteristics to better understand the role of cultural differences, as the countries in the present study shared a common language (Spanish) and similar lockdown policies.

### Conclusions

The findings of this study could significantly enhance our ability to predict the psychological impact of future health crises or catastrophes, particularly among the youngest and most vulnerable groups, such as students. In summary, cultural heterogeneity or variations in the severity of pandemic restriction measures do not appear to account for individual variability in psychological impact among higher education students. Conversely, the differential impact of the pandemic on mental health, especially in female students compared to the general population of their respective countries, suggests that this could result from an aggregate effect of shared characteristics among students, such as the educational-university environment and age. These findings also emphasize the importance of considering individual student differences when implementing university prevention programs to complement the overwhelmed public health systems during the pandemic. Such programs should particularly target women and the most vulnerable students with higher levels of neuroticism and loneliness (e.g., international Students) and those with lower levels of resilience, responsibility, and perceived competence. Recognizing the higher prevalence of mental health problems among university students and their unique characteristics compared to the general population, higher education institutions are increasingly focusing on developing prevention programs. These initiatives aim not only to improve the well-being of students but also to reduce health costs derived from complications during pandemics (United Nations, 2021). Examples include Social Responsibility programs that promote healthy campuses and initiatives such as the third half (Muro et al., 2022), designed to optimize the well-being of researchers in alignment with the Sustainable Development Goals and healthy environments proposed by the WHO.

### References

- Adamson, M. M., Phillips, A., Seenivasan, S., Martinez, J., Grewal, H., Kang, X., Coetzee, J., Luttenbacher, I., Jester, A., Harris, O. & Spiegel, D. (2020). International Prevalence and Correlates of Psychological Stress during the Global COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 17(24), 9248. <http://dx.doi.org/10.3390/ijerph17249248>
- Alomyan, H. (2021). The impact of distance learning on the psychology and learning of university students during the covid-19 pandemic. *International Journal of Instruction*, 14(4), 585-606. <https://doi.org/10.29333/iji.2021.14434a>
- Al-Tammemi, A., Akour, A., & Alfalah, L. (2020). Is It Just About Physical Health? An Online Cross-Sectional Study Exploring the Psychological Distress Among University Students in Jordan in the Midst of COVID-19 Pandemic. *Frontiers in Psychology*, 11, 1-11. <https://doi.org/10.3389/fpsyg.2020.562213>
- Appleby, J., King, N., Saunders, K., Bast, A., Rivera, D., Byun, J., Cunningham, S., Khera, C., & Duffy, A. (2022). Impact of the COVID-19 pandemic on the experience and mental health of university students studying in Canada and the UK: a cross-sectional study. *BMJ Open*, 12 (1), 1- 13. <https://doi.org/10.1136/bmjopen-2021-050187>
- Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability (Switzerland)*, 12(20), 1–34. <https://doi.org/10.3390/su1220843>
- Arévalo-Lara, S., & Vega-Falcon, V. (2022). Comparación de la salud mental de estudiantes de un instituto superior tecnológico durante

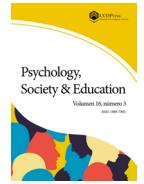
- la covid-19. *Psicología UNEMI*, 6(10), 96-111. <https://doi.org/10.29076/issn.2602-8379vol6iss10.2022pp96-111p>
- Benatov, J., Ochnik, D., Rogowska, A. M., Arzenšek, A., & Mars Bitenc, U. (2022). Prevalence and Sociodemographic Predictors of Mental Health in a Representative Sample of Young Adults from Germany, Israel, Poland, and Slovenia: A Longitudinal Study during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 19(3), 1334. <https://doi.org/10.3390/ijerph19031334>
- Byrd-Bredbenner, C., Eck, K., & Quick, V. (2021). GAD-7, GAD-2, and GAD-mini: Psychometric properties and norms of university students in the United States. *General Hospital Psychiatry*, 69, 61-66. <https://doi.org/10.1016/j.genhosppsych.2021.01.002>
- Brailovskaia, J., & Margraf, J. (2020). Predicting adaptive and maladaptive responses to the Coronavirus (COVID-19) outbreak: A prospective longitudinal study. *International Journal of Clinical and Health Psychology*, 20(3), 183-191. <https://doi.org/10.1016/j.ijchp.2020.06.002>
- Brooks, S., Webster, L., Smith, L., Woodland, S., Wessely, N., Greenberg, J., & Rubin, J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet* 395, 912-20. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Castellà, J., & Muro, A. (2022). How time perspective, personality, and morningness contributed to psychological well-being during the Coronavirus lockdown. *Quaderns de Psicologia*, 24(1): 1-24, 2022. <https://doi.org/10.5565/rev/qp psicologia.1752>
- Campo, A., Jiménez, M., & Caballero, C. (2021). Healthcare workers' distress and perceived discrimination related to COVID-19 in Colombia. *Nursing & Health Sciences*- 23(3), 763-767. <https://doi.org/10.1111/nhs.12854>
- Ceccato, I., Palumbo, R., Di Crosta, A., Marchetti, D., La Malva, P., Maiella, R., Marin, A., Mammarella, N., Verrocchio, M. C. & Di Domenico, A. (2021). "What's next?" Individual differences in expected repercussions of the COVID-19 pandemic. *Personality and Individual Differences*, 174, 110674. <https://doi.org/10.1016/j.paid.2021.110674>
- Coakley, K. E., Cargas, S., Walsh-Dille, M., & Mechler, H. (2022). Basic Needs Insecurities Are Associated with Anxiety, Depression, and Poor Health Among University Students in the State of New Mexico. *Journal of Community Health*, 47(3), 454-463. <https://doi.org/10.1007/s10900-022-01073-9>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Copeland, W. E., McGinnis, E., Bai, Y., Adams, Z., Nardone, H., Devadanam, V., Rettew, J., & Hudziak, J. J. (2021). Impact of COVID-19 Pandemic on College Student Mental Health and Wellness. *Journal of the American Academy of Child & Adolescent Psychiatry*, 60(1), 134-141.e2. <https://doi.org/10.1016/j.JAAC.2020.08.466>
- Cortés, N., & Vuelvas, C. (2020). COVID 19: Psychological Effects and Associated Factors in Mexican Nurses. *Disaster Medicine and Public Health Preparedness*, 1-7. <https://doi.org/10.1017/dmp.2020.495>
- CRUE. (2020). The University in the face of the pandemic. <https://www.crue.org/wp-content/uploads/2020/12/La-Universidad-frente-a-la-Pandemia.pdf>
- De Boer, H. (2021). COVID-19 in Dutch higher education. *Studies in Higher Education*, 46(1), 96-106. <https://doi.org/10.1080/03075079.2020.1859684>
- Diaz, O., Mendozilla, E., & Merido, T. (2022). Virtual tools to improve teachers' digital competencies in times of pandemic. *Journal of Research in Educational Sciences HORIZONS*, 6(24), 1059-1073. <https://doi.org/10.33996/revistahorizontes.v6i24.397>
- Długosz, P., & Kryvachuk, L. (2021). Neurotic Generation of Covid-19 in Eastern Europe. *Frontiers in Psychiatry*, 12, 654590. <https://doi.org/10.3389/fpsy.2021.654590>
- Egoavil, I., Sánchez, H., Yarlequell, L., Alva, L., Núñez, E., Arenas, C., ... & Fernández, C. (2021). Indicators of anxiety, depression, somatisation, and experiential avoidance in university students in Peru in quarantine due to COVID-19. *Journal of the Faculty of Human Medicine*, 21(2):346-353. <https://doi.org/10.25176/RFMH.v21i2.3654>
- Esmin, M., Sun, J., Abuidhail, J., Yoshimasu, K., Kujan, O., Janghorbani, M., Flood, C., Carta, M., Tran, U., Mechri, A., Hamdan, M., Poyrazli, S., Aidoudi, K., Bakhshi, S., Harlak, H., Moro, M., Nawafleh, H., Phillips, L., Shaheen, A., Taifour, S., ... Voracek, M. (2016). Suicidal Behavior and Psychological Distress in University Students: A 12-nation Study. *Archives of Suicide Research: Official Journal of the International Academy for Suicide Research*, 20(3), 369-388. <https://doi.org/10.1080/1381118.2015.1054055>
- Fernández, J., Alvarez, M., Blasco, T., Doval, E., & Sanz, A. (1998). Validation of the Walston Personal Competence Scale: Implications for the study of stress [Validación de la escala de competencia personal de Walston: Implicaciones para el estudio del estrés]. *Ansiedad y Estrés*, 1(4), 31-41.
- Friedman H. (2019). Neuroticism and health as individuals age. *Personality Disorders*, 10(1), 25-32. <https://doi.org/10.1037/per0000274>
- Garbe, L., Rau, R., & Toppe, T. (2020, April 13). Influence of perceived threat of Covid-19 and HEXACO personality traits on toilet paper stockpiling. *Plos One* 15(6) e0234232. <https://doi.org/10.31219/osf.io/eyur7>
- Gloster, A., Lamnisos, D., Lubenko, J., Presti, G., Squatrito, V., Constantinou, M., Nicolaou, C., Papacostas, S., Aydin, G., Chong, Y., Chien, W., Cheng, H., Ruiz, F., Garcia-Martin, M., Obando-Posada, D., Segura, M., Vasiliou, V., McHugh, L., Höfer, S., Baban, A., ... Karekla, M. (2020). Impact of COVID-19 pandemic on mental health: An international study. *PLOS ONE*, 15(12), e0244809. <https://doi.org/10.1371/journal.pone.0244809>
- Gubler, D., Makowski, L., Troche, S., & Schlegel, K. (2021). Loneliness and Well-Being During the Covid-19 Pandemic: Associations with Personality and Emotion Regulation. *Journal of Happiness Studies*, 22(5), 2323-2342. <https://doi.org/10.1007/s10902-020-00326-5>
- Heumann, E., Helmer, S. M., Busse, H., Negash, S., Horn, J., Pischke, C. R., Niephaus, Y., & Stock, C. (2023). Anxiety and depressive symptoms of German university students 20 months after the COVID-19 outbreak - A cross-sectional study. *Journal of Affective Disorders*, 320, 568-575. <https://doi.org/10.1016/j.jad.2022.09.158>
- Jeste, D., Lee, E., & Cacioppo, S. (2020). Battling the Modern Behavioral Epidemic of Loneliness: Suggestions for Research and Interventions. *JAMA Psychiatry*, 77(6), 553-554. <https://doi.org/10.1001/jamapsychiatry.2020.0027>
- Keckojevic, A., Basch, C., Sullivan, M., & Davi, N. (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>
- Kismihók, G., Cahill, B., Ganttner, S., Metcalfe, J., T. Mol, S., McCashin, D., Lasser, J., Günes, M., Schroijen, M., Grund, M., Leveck, K., Guthrie, S., Wac, K., Dahlgaard, J. O., Nadim Adi, M., & Kling, C. (2021). *Researcher Mental Health and Well-being Manifesto*. Zenodo. <https://doi.org/10.5281/zenodo.5788557>
- Kismihók, G., McCashin, D., Mol, S. T., & Cahill, B. (2022). The well-being and mental health of doctoral candidates. *European Journal of Education*, 57(3), 410-423. <https://doi.org/10.1111/ejed.12519>
- Kleiman, E., Yeager, A., Grove, J., Kellerman, J., & Kim, J. (2020). Real-time Mental Health Impact of the COVID-19 Pandemic on College Students: Ecological Momentary Assessment Study. *JMIR Ment Health*, 7(12), e24815. <http://doi.org/10.2196/24815>
- Kroencke, L., Geukes, K., Utesch, T., Kuper, N., & Back, M. (2020). Neuroticism and emotional risk during the COVID-19 pandemic. *Journal of Research in Personality*, 89, 104038. <https://doi.org/10.1016/j.jrp.2020.104038>
- Kroenke, K., Spitzer, R., & Williams, J. (2003). The Patient Health Questionnaire-2: validity of a two-item depression screener. *Medical Care*, 41(11), 1284-1292. <https://doi.org/10.1097/01.MLR.0000093487.78664.3C>
- Labrague, L., De Los Santos, J., & Falguera, C. (2021). Social and emotional loneliness among college students during the COVID-19 pandemic: The predictive role of coping behaviors, social support, and personal resilience. *Perspectives in Psychiatric Care*, 57(4), 1578-1584. <https://doi.org/10.1111/ppc.12721>
- Labrague L. (2021). Resilience as a mediator in the relationship between stress-associated with the Covid-19 pandemic, life satisfaction, and psychological well-being in student nurses: A cross-sectional study. *Nurse Education in Practice*, 56, 103182. <https://doi.org/10.1016/j.nepr.2021.103182>
- Lechner, W., Laurene, K., Patel, S., Anderson, M., Grega, C., & Kenne, D. (2020). Changes in alcohol use as a function of psychological distress and social support following COVID-19 related University closings. *Addictive Behaviors*, 110, 106527. <https://doi.org/10.1016/j.addbeh.2020.106527>
- Leonangeli, S., Michelini, Y., & Montejano, G. R. (2022). Depression, anxiety and stress in university students before and during the first three months of quarantine by COVID-19. *Revista Colombiana de Psiquiatría*. <https://doi.org/10.1016/j.rcp.2022.04.008>
- Lisnvy, K., Pearl, D., McWhirter, J., & Papadopoulos, A. (2022). Examining the influence of human and psychological capital variables on post-secondary students' academic stress. *Studies in Higher Education*, 1-15. <https://doi.org/10.1080/03075079.2022.2083101>
- Löwe, B., Wahl, I., Rose, M., Spitzer, C., Glaesmer, H., Wingenfeld, K., Schneider, A., & Brähler, E. (2010). A 4-item measure of depression and anxiety: validation and standardization of the Patient Health Questionnaire-4 (PHQ-4) in the general population. *Journal of Affective Disorders*, 122(1-2), 86-95. <https://doi.org/10.1016/j.jad.2009.06.019>
- Main, A., Zhou, Q., M., Y., Luecken, L., & Liu, X. (2011). Relations of SARS-related stressors and coping to Chinese college students' psychological adjustment during the 2003 Beijing SARS epidemic. *Journal of Counselling Psychology*, 58(3), 410-423. <https://doi.org/10.1037/a0023632>
- Marques, G., Drissi, N., Díez, I., De Abajo, B., & Ouhbi, S. (2021). Impact of COVID-19 on the psychological health of university students in Spain and their attitudes toward Mobile mental health solutions. *International Journal of Medical Informatics*, 147, 104369. <https://doi.org/10.1016/j.ijmedinf.2020.104369>

- Mateo, C., Puig, N., Muro, A., Pros, R., Méndez, J., & Sanz, A. (2023). MOTEMO-OUTDOOR: ensuring learning and health security during the COVID-19 pandemic through outdoor and online environments in higher education. *Learning Environments Research*, 26, 823-841. <https://doi.org/10.1007/s10984-023-09456-y>
- Mattsson, E., James, L., & Engdahl, B. (2018). Personality Factors and Their Impact on PTSD and Post-traumatic Growth is Mediated by Coping Style Among OIF/OEF Veterans. *Military Medicine*, 183(9-10), e475-e480. <https://doi.org/10.1093/milmed/usx201>
- Mattijssen, L., Bergmans, J., van der Weijden, I., & Teelken, J. (2021). In the eye of the storm: the mental health situation of PhD candidates. *Perspectives on medical education*, 10(2), 71-72. <https://doi.org/10.1007/s40037-020-00639-4>
- McCrae, R., & Costa, P. (2004). A contemplated revision of the NEO Five-Factor Inventory. *Personality and Individual Differences*, 36(3), 587-596. [https://doi.org/10.1016/S0191-8869\(03\)00118-1](https://doi.org/10.1016/S0191-8869(03)00118-1)
- Metcalfe, J., Bebiroglu, N., Kismihók, G., Camilleri, J., & Cahill, B. (2022). *Creating Research Environments that foster Mental Health and Wellbeing*. EuroScience Open Forum (ESOF 2022), Leiden, Netherlands. <https://doi.org/10.5281/zenodo.6359935>
- Modersitzki, N., Phan, L., Kuper, N., & Rauthmann, J. (2021). Who Is Impacted? Personality Predicts Individual Differences in Psychological Consequences of the COVID-19 Pandemic in Germany. *Social Psychological and Personality Science*, 12(6), 1110-1130. <https://doi.org/10.1177/1948550620952576>
- Morales, S., López, A., Bosch, A., Beristain, A., Robles, R., López, F., & Fernández, C. (2020). Mental health conditions during the COVID-19 pandemic. *Revista Internacional De Investigación En Adicciones*, 6(2), 11-24. <https://doi.org/10.28931/riiad.2020.2.03>
- Moret, C., & Murphy, M. (2022). Anxiety, resilience and local conditions: A cross-cultural investigation in the time of Covid-19. *International Journal of Psychology: Journal International de Psychologie*, 57(1), 161-170. <https://doi.org/10.1002/ijop.12822>
- Morgan, B., & Simmons, L. (2021). 'PERMA' Response to the Pandemic: An Online Positive Education Programme to Promote Wellbeing in University Students. *Frontiers in Education*, 6, 172-182. <https://doi.org/10.3389/feduc.2021.642632>
- Muro, A., Bonilla, I., Tejada-Gallardo, C., Jiménez-Villamizar, M. P., Cladellas, R., Sanz, A., & Torregrossa, M. (2022). The Third Half: A Pilot Study Using Evidence-Based Psychological Strategies to Promote Well-Being among Doctoral Students. *International Journal of Environmental Research and Public Health*, 19(24), 16905. MDPI AG. Retrieved from <https://doi.org/10.3390/ijerph192416905>
- Muro, A., Feliu, A., & Castellà, J. (2021). Psychological impact of COVID-19 lockdowns among adult women: the predictive role of individual differences and lockdown duration. *Women & Health*, 61(7), 668-679. <https://doi.org/10.1080/03630242.2021.1954133>
- Musa, A., Ashraf, J., Tsai, F., Albmagd, S., Liu, C., Hussain, H., Voslarova, E., Khalil, M., Wolitzky-Taylor, K., Lee, D., Sugar, J., Pendi, K., Lee, J., Abdelmaksoud, R., Adel, N., & Baron, D. (2020). Depression Severity and Depression Stigma Among Students: A Survey of Universities in Five Countries. *The Journal of Nervous and Mental Disease*, 208(11), 884-889. <https://doi.org/10.1097/NMD.0000000000001226>
- Nochaiwong, S., Ruengorn, C., Thavorn, K., Hutton, B., Awiphan, R., Phosuya, C., Ruanta, Y., Wongpakaran, N., & Wongpakaran, T. (2021). Global prevalence of mental health issues among the general population during the coronavirus disease-2019 pandemic: a systematic review and meta-analysis. *Scientific Reports*, 11(1), 10173. <https://doi.org/10.1038/s41598-021-89700-8>
- Nomura, K., Nakao, M., Sato, M., Ishikawa, H., & Yano, E. (2007). The association of the reporting of somatic symptoms with job stress and active coping among Japanese white-collar workers. *Journal of Occupational Health*, 49(5), 370-375. <https://doi.org/10.1539/joh.49.370>
- Nowicki, G., Ślusarska, B., Tucholska, K., Naylor, K., Chrzan-Rodak, A., & Niedorys, B. (2020). The Severity of Traumatic Stress Associated with COVID-19 Pandemic, Perception of Support, Sense of Security, and Sense of Meaning in Life among Nurses: Research Protocol and Preliminary Results from Poland. *International Journal of Environmental Research and Public Health*, 17(18), 6491. <https://doi.org/10.3390/ijerph17186491>
- Ochnik, D., Rogowska, A. M., Kuśnierz, C., Jakubiak, M., Schütz, A., Held, M. J., Arzenšek, A., Benatov, J., Berger, R., Korchagina, E. V., Pavlova, I., Blažková, I., Aslan, I., Çınar, O., & Cuero-Acosta, Y. (2021). Mental health prevalence and predictors among university students in nine countries during the COVID-19 pandemic: a cross-national study. *Scientific Reports*, 11(1), 18644. <https://doi.org/10.1038/s41598-021-97697-3>
- Organization for Economic Cooperation and Development - OECD. (2020). *Key OECD policy measures in the face of coronavirus (COVID-19) Covid-19 in Latin America and the Caribbean: An overview of government responses to the crisis [Medidas políticas clave de la OCDE ante el coronavirus (COVID-19) Covid-19 en América Latina y el Caribe: Panorama de las respuestas de los gobiernos a la crisis]*. <https://www.oecd.org/coronavirus/policy-responses/covid-19-en-america-latina-y-el-caribe-panorama-de-las-respuestas-de-los-gobiernos-a-la-crisis-7d9f7a2b/>
- Otten, D., Tibubos, A., Schomerus, G., Brähler, E., Binder, H., Kruse, J., Ladwig, K., Wild, P., Grabe, H., & Beutel, M. (2021). Similarities and Differences of Mental Health in Women and Men: A Systematic Review of Findings in Three Large German Cohorts. *Frontiers in Public Health*, 9, 553071. <https://doi.org/10.3389/fpubh.2021.553071>
- Pérez-Anaya, O., Wilches-Visbal, H., & Jiménez-Villamizar, M. (2021). Biophysical aspects of SARS-CoV-2 transmission and measures to counteract COVID-19: a comprehensive review. *Duazary*, 18(3), 268-282. <https://doi.org/10.21676/2389783X.4226>
- Pidgeon, M., Rowe, N., Stapleton, P., Magyar, H., Barbara, C., & Lo, Y. (2014). Examining Characteristics of Resilience among University Students: An International Study. *Open Journal of Social Sciences*, 2, 14-22. <https://doi.org/10.4236/jss.2014.211003>
- Ruiz, P., Semblat, F., & Pautassi, R. M. (2022). Change in Psychoactive Substance Consumption in Relation to Psychological Distress During the COVID-19 Pandemic in Uruguay. *Sultan Qaboos University Medical Journal*, 22(2), 198-205. <https://doi.org/10.18295/squmj.5.2021.106>
- Russell, D., Peplau, L., & Ferguson, M. (1978). Developing a measure of loneliness. *Journal of Personality Assessment*, 42(3), 290-294. [https://doi.org/10.1207/s15327752jpa4203\\_11](https://doi.org/10.1207/s15327752jpa4203_11)
- Sanabria-Mazo, J., Useche, B., Ochoa, P., Rojas, D., Mateo, C., Carmona, M., Crespo, N., Selva, C., Muro, A., Méndez-Ulrich, J., Feliu-Soler, A., Luciano, J., & Sanz, A. (2021). Social Inequities in the Impact of COVID-19 Lockdown Measures on the Mental Health of a Large Sample of the Colombian Population (PSY-COVID Study). *Journal of Clinical Medicine*, 10(22), 5297. <https://doi.org/10.3390/jcm10225297>
- Sánchez, H., Yarlequé, L., Alva, Javier, Núñez, E., Iparraguirre, C., Matalinares, M., Gutiérrez, E., Egoavil, I., Solís, J., & Fernández, C. (2021). Indicators of anxiety, depression, somatisation and experiential avoidance in university students in Peru in quarantine due to Covid-19. *Revista de la Facultad de Medicina Humana*, 21(2), 346-353. <https://doi.org/10.25176/rfmhv.21i1.3179>
- Sapra, A., Bhandari, P., Sharma, S., Chanpura, T., & Lopp, L. (2020). Using Generalized Anxiety Disorder-2 (GAD-2) and GAD-7 in a Primary Care Setting. *Cureus*, 12(5), e8224. <https://doi.org/10.7759/cureus.8224>
- Schlarb, A., Claßen, M., Hellmann, S., Vögele, C., & Gulewitsch, M. (2017). Sleep and somatic complaints in university students. *Journal of Pain Research*, 10, 1189-1199. <https://doi.org/10.2147/JPR.S125421>
- Snijders, T., & Bosker, R. (2012). *Multilevel analysis: An Introduction to Basic and Advanced Multilevel Modeling*. Sage Publications.
- Solomou, I., & Constantinidou, F. (2020). Prevalence and predictors of anxiety and depression symptoms during the COVID-19 pandemic and compliance with precautionary measures: Age and sex matter. *International Journal of Environmental Research and Public Health*, 2, 1-19. <https://doi.org/10.3390/ijerph17144924>
- Sun, L., Sun, Z., Wu, L., Zhu, Z., Zhang, F., Shang, Z., Jia, Y., Gu, J., Zhou, Y., Wang, Y., Liu, N., & Liu, W. (2021). Prevalence and risk factors for acute posttraumatic stress disorder during the COVID-19 outbreak. *Journal of Affective Disorders*, 283, 123-129. <https://doi.org/10.1016/j.jad.2021.01.050>
- Sun, Y., Wu, Y., Fan, S., Dal Santo, T., Li, L., Jiang, X., Li, K., Wang, Y., Tasleem, A., Krishnan, A., He, C., Bonardi, O., Boruff, J., Rice, D., Markham, S., Levis, B., Azar, M., Thombs-Vite, I., Neupane, D., &... Thombs, B. (2023). Comparison of mental health symptoms before and during the covid-19 pandemic: evidence from a systematic review and meta-analysis of 134 cohorts. *BMJ*, 380. <https://doi.org/10.1136/bmj-2022-074224>
- Tedeschi, R., & Calhoun, L. (1996). The Posttraumatic Growth Inventory: measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9(3), 455-471. <https://doi.org/10.1007/BF02103658>
- Torres, A., Palomin, A., Morales, F., Sevilla, M., Colunga, C., Ángel, M., Sarabia, L., Dávalos, G., Delgado, D., Duclos, D., Vazquez, J., Vazquez, C., Egea-Romero, M., & Mercado, A. (2022). A Cross-sectional Study of the Mental Health Symptoms of Latin American, US Hispanic, and Spanish College Students Amid the COVID-19 Pandemic. *International Journal of Mental Health and Addiction*, 1-20. Advance online publication. <https://doi.org/10.1007/s11469-022-00827-9>
- United Nations. (2021, October 8). *With the pandemic, the urgency to attend to mental health and the lack of services to do so emerges [Con la pandemia, aflora la urgencia de atender la salud mental y la falta de servicios para hacerlo]* | News ONU. <https://news.un.org/es/story/2021/10/1498052>
- University of Oxford. (2022). *COVID-19 Government response tracker*. <https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker#data>
- Vaishnavi, S., Connor, K., & Davidson, J. (2007). An abbreviated version of the Connor-Davidson Resilience Scale (CD-RISC), the CD-RISC2: psychometric properties and applications in psychopharmacological trials. *Psychiatry Research*, 152(2-3), 293-297. <https://doi.org/10.1016/j.psychres.2007.01.006>

- Vázquez, C., Valiente, C., García, F., Contreras, A., Peinado, V., Trucharte, A., & Bentall, R. (2021). Post-Traumatic Growth and Stress-Related Responses During the COVID-19 Pandemic in a National Representative Sample: The Role of Positive Core Beliefs About the World and Others. *Journal of Happiness Studies*, 22(7), 2915–2935. <https://doi.org/10.1007/s10902-020-00352-3>
- United Nations. (2002). The 17 Goals|Sustainable Development. <https://sdgs.un.org/goals>
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., McIntyre, R. S., Choo, F. N., Tran, B., Ho, R., Sharma, V. K., & Ho, C. (2020). A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, Behavior and Immunity*, 87, 40–48. <https://doi.org/10.1016/j.bbi.2020.04.028>
- Werner, A., Tibubos, A., Müller, L., Reichel, J., Schäfer, M., Heller, S., Pfirrmann, D., Edelmann, D., Dietz, P., Rigotti, T., & Beutel, M. (2021). The impact of lockdown stress and loneliness during the COVID-19 pandemic on mental health among university students in Germany. *Scientific Reports*, 11(1), 22637. <https://doi.org/10.1038/s41598-021-02024-5>
- World Health Organization. (2022). Mental Health: Strengthening Our Response. <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L., Gill, H., Phan, L., Chen-Li, D., Jacobucci, M., Ho, R., Majeed, A., & 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>
- Yehudai, M., Bender, S., Gritsenko, V., Konstantinov, V., Reznik, A., & Isralowitz, R. (2020). COVID-19 fear, mental health, and substance misuse conditions among university social work students in Israel and Russia. *International Journal of Mental Health and Addiction*, 20(1), 316–323. <https://doi.org/10.1007/s11469-020-00360-7>
- Zhai, Y., & Du, X. (2020). Addressing collegiate mental health amid COVID-19 pandemic. *Psychiatry Research*, 288, 113003. <https://doi.org/10.1016/j.psychres.2020.113003>
- Zijlema, W., Stolk, R., Löwe, B., Rief, W., BioSHaRE, White, P., & Rosmalen, J. (2013). How to assess common somatic symptoms in large-scale studies: a systematic review of questionnaires. *Journal of Psychosomatic Research*, 74(6), 459–468. <https://doi.org/10.1016/j.jpsychores.2013.03.093>

**3. Artículo 3:**

Jiménez-Villamizar, M. P., Tejada-Gallardo, C., Becerra-Rojas, A., Devoto-Araya, M., Fernández-García, M., López-García, R., Bonilla, I., Tadić Vujčić, M., T. Mol, S., Sanz-Ruiz, A., & Muro-Rodríguez, A. (2024). The Third Half: a positive psychoeducational program to promote well-being and mental health among early career researchers. *Psychology, Society & Education*, 16(3), 20–30. <https://doi.org/10.21071/pse.v16i3.17180>



## The Third Half: a positive psychoeducational program to promote well-being and mental health among early career researchers

María Paola Jiménez-Villamizar\*<sup>1</sup>, Claudia Tejada-Gallardo<sup>2</sup>, Angelica Becerra-Rojas<sup>1</sup>, Maximiliano Devoto-Araya<sup>1</sup>, María Fernández-García<sup>1</sup>, Rodrigo López-García<sup>1</sup>, Ivan Bonilla<sup>2,3</sup>, Maja Tadić Vujčić<sup>4</sup>, Stefan T. Mol<sup>5</sup>, Antoni Sanz-Ruiz<sup>1</sup> & Anna Muro-Rodríguez\*<sup>1</sup>

<sup>1</sup> Universitat Autònoma de Barcelona, Barcelona (Spain)

<sup>2</sup> Universitat de Lleida, Lleida (Spain)

<sup>3</sup> Institut Nacional d'Educació Física de Catalunya, Barcelona (Spain)

<sup>3</sup> Institute of Social sciences Ivo Pilar, Zagreb (Croatia)

<sup>4</sup> University of Amsterdam, Amsterdam (Netherlands)

### KEYWORDS

Doctoral students  
Health promotion  
Early-career researcher support  
Affective distress reduction

### ABSTRACT

The decreasing well-being among doctoral candidates, coupled with a high prevalence of distress problems, is a topic of increasing concern in the field of higher education and research policy. The present study aimed to replicate, implement, and evaluate the effectiveness of The Third Half, a multi-component psychoeducational program in doctoral students. To address the limitations of the pilot study, we conducted a non-randomized controlled study using a repeated measures pre-post design with a total of 97 participants ( $M_{age} = 32.5$ ;  $SD = 8.23$ ), of whom 26 participated in the experimental group. Results showed that Third Half program participants reported significant decreases in indicators of negative affect ( $F = 4.01$ ;  $p = .04$ ) and anxiety ( $F = 4.95$ ;  $p = .02$ ) compared to the general control group; in the matched sample analysis ( $n = 20$ ) significant decreases were found in indicators of negative affect ( $F = 4.72$ ;  $p = .03$ ), anxiety ( $F = 4.09$ ;  $p < .001$ ), and depression ( $F = 4.95$ ;  $p = .03$ ). It is concluded that the Third Half program is an effective and implementable psychoeducational program to improve the skills of early-career researchers in wellness management.

## The Third Half: un programa psicoeducativo para promover el bienestar y la salud mental entre los investigadores que inician su carrera

### PALABRAS CLAVE

Estudiantes de doctorado  
Promoción de la salud  
Apoyo a investigadores en inicio de carrera  
Reducción del malestar afectivo

### RESUMEN

El bienestar cada vez menor entre los estudiantes de doctorado y una alta prevalencia de problemas de angustia es un tema de creciente preocupación en el campo de la educación superior y las políticas de investigación. El presente estudio tuvo como objetivo replicar, implementar y evaluar la efectividad de The Third Half, un programa psicoeducativo multicomponente para estudiantes de doctorado. Para abordar las limitaciones del estudio piloto, realizamos un estudio controlado no aleatorio utilizando un diseño de medidas repetidas pre-post con un total de 97 participantes ( $M_{edad} = 32.5$ ;  $DE = 8.23$ ), de los cuales 26 participaron en el grupo experimental. Los resultados mostraron que los participantes del programa Third Half informaron disminuciones significativas en los indicadores de afecto negativo ( $F = 4.01$ ;  $p = .04$ ) y ansiedad ( $F = 4.95$ ;  $p = .02$ ) en comparación con el grupo de control general; en el análisis de la muestra emparejada ( $n = 20$ ) se encontraron disminuciones significativas en los indicadores de afecto negativo ( $F = 4.72$ ;  $p = .03$ ), ansiedad ( $F = 4.09$ ;  $p < .001$ ) y depresión ( $F = 4.95$ ;  $p = .03$ ). Se concluye que el programa Third Half es un programa psicoeducativo eficaz e implementable para mejorar las habilidades de los investigadores en el inicio de su carrera en la gestión del bienestar.

\* Corresponding author: María Paola Jiménez Villamizar. Universitat Autònoma de Barcelona, Department of Basics, Developmental and Educational Psychology, Carrer de la Fortuna, s/n, 08193, Bellaterra, Barcelona, Spain. [mariapaola.jimenez@autonoma.cat](mailto:mariapaola.jimenez@autonoma.cat)

Cite this article as: Jiménez-Villamizar, M. P., Tejada-Gallardo, C., Becerra-Rojas, A., Devoto-Araya, M., Fernández-García, M., López-García, R., Bonilla, I., Tadić Vujčić, M., Mol, S. T., Sanz-Ruiz, A., & Muro-Rodríguez, A. (2024). The Third Half: a positive psychoeducational program to promote well-being and mental health among early career researchers. *Psychology, Society & Education*, 16(3), 20-30. <https://doi.org/10.21071/psye.v16i3.17180>

Received: 13 May 2024. First review: 28 September 2024. Accepted: 12 November 2024.

Psychology, Society & Education is published under Creative Commons License ([CC BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/)).

ISSN 1989-709X | © 2024. Psy, Soc & Educ.



Well-being and mental health management are gaining attention in the European Research Area (ERA) due to the rising mental health problems reported in early career researchers (ECR; (Kismihók et al., 2022). Well-being is a state of balance and satisfaction across social, emotional, mental, and physical aspects, characterized by a positive life perception, sense of purpose, and self-compassion (Sverdlik et al., 2020). Despite the high work motivation and satisfaction with their training process, ECRs face significant distress and pressure from the competitive nature of research careers, leading to self-doubt and decreased well-being (Muro & Jiménez-Villamizar, 2023; Nori & Vanttaja, 2022; Sverdlik et al., 2020). Doctoral candidates also deal with job and financial precarity (Charles et al., 2021), as systemic issues such as low salaries, long hours, or temporary contracts that contribute to professional uncertainty and burnout (Nori et al., 2023). Additionally, the pressure to publish for career advancement exacerbates stress and anxiety due to insufficient support (González-Betancor & Dorta-González, 2020). Quality of supervision is another critical concern for ECRs mental health: inadequate guidance can lead to isolation and frustration, while harassment can affect emotional and psychological safety (Cahill et al., 2023). Given the important role of ECRs in science advance, facilitating their emotional well-being from doctoral schools is essential, in line with the guidelines and recommendations on mental health in educational settings (United Nations, 2022; WHO, 2022).

#### *Overview of mental health and well-being in doctoral students*

On the one hand, research in various contexts reports that the rates of depression and anxiety among doctoral students are around the 40% (Evans et al., 2018). Compared to the general population, which shows rates of around the 28% (Jiménez-Villamizar et al., 2023), a significantly higher prevalence is observed in doctoral students. These data reflect a worrying picture regarding the deterioration of well-being and the increase in psychological distress in the academic field (Levecque et al., 2017), understanding well-being as a general state of satisfaction and emotional balance (Schmidt & Hansson, 2018). On the other hand, psychological distress refers to an experience of anguish or emotional discomfort, that manifests in symptoms such as anxiety, depression, and stress (Twenge & Joiner, 2020). Psychological distress in doctoral students shows rates between 30% and 50% (González-Betancor & Dorta-González, 2020; Martínez et al., 2021), with a 42% risk of developing mental disorders and up to a 80% of risk for mental exhaustion (Abreu et al., 2018). In addition, different studies aimed at identifying the antecedents of psychological distress and well-being of doctoral students have found that social and psychological support, and perceptions of inclusion within the work context, are related to greater life satisfaction and psychological well-being (Milicev et al., 2023; Muro et al., 2022). In response to these alarming data, the European Charter for Researchers (European Commission, 2011), the European Doctoral Council (EURO-DOC, Kismihók, et al., 2021) or the Mental Health

Observatory for Researchers (Remo, 2023) recommend that higher education institutions should urgently develop methods and trainings to enhance the softskills of researchers and to provide the much-needed support to safeguard researchers' well-being in the workplace and to foster the training offers that guarantee the development of their talent.

#### *Programs that promote well-being in doctoral students*

Doctoral schools in the ERA are slowly expanding their training offers to develop soft skills among ECRs to increase their employability in their future labour market (Valeeva et al., 2020). They are just beginning to implement upskilling programs focused on mental health management in research careers, thus empirical evidence for the effectiveness of psychoeducational programs to upskill ECRs in well-being remains scarce (Muro et al., 2022). For example, coaching in doctoral education has been shown to improve self-efficacy, time management, self-expectations, and communication skills, which correlate with lower stress and greater emotional well-being (Lane & Wilde, 2018; Reche et al., 2023). Another study at the University of Witwatersrand found coaching psychology interventions improved studentsupervisor partnerships, self-awareness, and career progression, while it enhanced tangible research outcomes like publications and grant applications (Geber, 2010).

In Spain, some pilot psychoeducational programs like the Third Half (Jiménez-Villamizar et al., 2023; Muro et al., 2022) were developed to address pandemic-related challenges and the declining mental health among university students and ECRs. The Third Half program uses evidence-based psychological techniques and a holistic approach, integrating coaching, positive psychology and motivational components – such as the self-determination theory (Ryan & Deci, 2000) and humanistic principles like unconditional acceptance (Rogers, 1985)– and other techniques including outdoor activities (Muro et al., 2022), gamification (Manzano-León et al., 2021), and peer-mentoring (Gauttier & McCashin, 2023; Kismihók et al., 2022). This approach not only sets it apart from typical psychological support but also promotes well-being training through culturally adapted sessions that encourage participants to incorporate behavioural, cognitive and emotional practices into their daily lives. The pilot implementation results show increased well-being and reduced distress among participants (Muro et al., 2022), but limitations of the study such as the small sample size or the lack of control group suggest the need of further research..

#### *The present study*

Accordingly, this study aimed to replicate the pilot study of the Third Half improving the study design by increasing the sample size and including a control group. Based on the pilot study results (Muro, Bonilla et al., 2022), we hypothesized that the Third Half group would demonstrate (H1) greater well-being and (H2) lower psychological distress compared to the control group at post-test.

## Method

### Participants

A sample of 97 doctoral students, aged 23 to 61 years ( $M = 32.48$ ;  $SD = 8.23$ ) took part in this study. To be eligible for inclusion participants had to be active on-site students enrolled in any year of the Autonomous University of Barcelona (UAB) doctoral program. A non-probabilistic sampling method was used as students self-selected themselves into the intervention or control group. The control group was composed of 71 doctoral students and the experimental group of 26 doctoral students. The sociodemographic characteristics of the participants are shown in Table 1. No significant differences were found between the participants of the Third Half vs. the control group.

### Procedure

#### Recruitment and retention of participants

On 2 February 2023, the Doctoral School sent a call via email and UAB social networks to all 4,587 doctoral students at UAB, inviting them to participate in an online questionnaire and/or the Third Half program. The initial survey garnered 183 responses, leading to the formation of a control group (students not interested in participating in the program but willing to complete a future survey) and an intervention group (students

expressing interest in the Third Half program). The low response rate is attributed to the high volume of emails students receive from the Doctoral School and their limited availability due to heavy workloads. Students prioritize their theses and research publications, leaving little time for other activities. To be included in the program, participants had to meet specific eligibility criteria, including being over 18 years old and actively enrolled in a doctoral program at UAB. Exclusion criteria encompassed those enrolled in training programs other than doctoral programs, individuals with serious mental disorders or psychiatric conditions requiring specialized treatment, and students currently receiving active treatment from mental health professionals.

This study complied with the Declaration of Helsinki and was approved by the Doctoral School, the Campus-SIS Unit of the Campus Vice-Rectorate and by the Ethics Committee of the UAB (CEEAH6007).

#### Intervention program design and implementation: The Third Half

The intervention program was conducted during the 2022-2023 academic year, consisting of six three-hour sessions held bi-weekly from March to May. Each session included two blocks: the first focused on promoting well-being through gamified outdoor activities based on positive psychology (Muro et al., 2023), while the second facilitated peer support through social interactions over snacks on campus.

**Table 1**

*Participants' demographic and preintervention characteristics (chi square test)*

Variable	Third Half ( $n = 26$ ) $n$ (%)	Control ( $n = 71$ ) $n$ (%)
Age ( $\chi^2 = 0.25, p = .62$ )		
≤ 30	13 (50)	42 (59.2)
> 30	13 (50)	29 (40.8)
Gender ( $\chi^2 = 15.67, p = .07$ )		
Female	16 (61.5)	44 (61.9)
Male	9 (34.6)	25 (35.1)
Non-binary	1 (3.9)	2 (3)
Nationality ( $\chi^2 = 7.32, p = .12$ )		
European	16 (61.5)	53 (74.6)
South American	9 (34.6)	17 (23.9)
Asian	1 (3.9)	1 (1.5)
International PhD ( $\chi^2 = 0.35, p = .35$ )		
Yes	13 (50)	17 (23.9)
No	13 (50)	54 (76.1)
PhD year ( $\chi^2 = 12.36, p = .41$ )		
1 <sup>st</sup>	14 (53.9)	19 (26.8)
2 <sup>nd</sup>	5 (19.2)	15 (21.1)
3 <sup>rd</sup>	5 (19.2)	19 (26.8)
> 3 <sup>rd</sup>	2 (7.7)	18 (25.3)

Originally implemented in 2021-2022, the Third Half program successfully met its objectives (Muro, Bonilla et al., 2022). It is grounded in five evidence-based pillars: a) gamification activities (Manzano-León et al., 2021) to enhance motivation and participation through team-building exercises and games; b) outdoor activities in green spaces (Muro et al., 2022) to promote relaxation and overall health; c) application of positive psychology techniques in educational settings (Vázquez & Hervás, 2018) to foster improvement and growth; d) physical activities (Devoto et al., 2023) to encourage teamwork and cooperation; and e) mentoring and peer support (Kismihók et al., 2022) to provide reflection, dialogue, and reduce social isolation, promoting shared learning and mutual support. A detailed program description is available in Muro & Jiménez (2023).

This intervention program was implemented during the 2022-2023 academic year and consisted of six sessions, lasting three hours each, delivered once every two weeks, from March to May. Each session was divided into two blocks, with the first two hours dedicated to promoting well-being in outdoor spaces on campus using gamified and physical activities, positive psychology (Muro et al., 2023). The second block was devoted to the facilitation of peer support through social connections in which participants shared a drink or a snack somewhere on the university campus. The group of trainers was made up of five psychologists, ECR with experience in training in educational environments, and with a high degree of motivation and academic well-being. They were trained by the research team in the specific techniques and application of the Third Half.

#### Data collection

Data collection was conducted including assessments one week before the start of the intervention (baseline) and one week after the end of the intervention (post-intervention), in both the intervention and control groups.

#### Instruments

*Baseline survey.* The survey was designed in collaboration with several researchers from the School of Psychology and an invitation that included the link to the online form was sent to the doctoral candidates by means of an email sent by the Doctoral School. The first part of the online survey captured socio-demographic data of the participants. The second part of the survey encompassed different relevant, construct valid, and reliable questionnaires, widely used in research on emotional well-being and psychological distress.

*Well-being.* Well-being was operationalized in terms of satisfaction with life and affective experiences related to well-being indicators. Specifically, to assess global satisfaction with life, we used the *Satisfaction with Life Scale* (SWLS; Vázquez et al., 2013), a valid and reliable measure that consists of 5 items (e. g., “In most ways my life is close to my ideal”) with scores ranging from 1 = *Not at all or very slightly* to 5 = *A lot*. In the present study, it showed an adequate internal consistency of Cronbach’s  $\alpha = .84$ . To assess the affective

aspect of well-being, we used the *Positive and Negative Affect Scale* - PANAS (Watson et al., 1988), which assesses positive and negative affective experiences using 20 items, 10 of which measure positive and pleasant affect (e. g., “Interested in many things”) and 10 which measure negative or unpleasant affect (e. g., “Annoyed”). Responses were provided on a Likert response scale with five response options ranging from 1 = *Not at all or almost nothing* to 5 = *Very much*, and with scores from 10 to 50 for each of the two subscales: higher scores indicate greater positive or higher negative affect in the present study, scale reliabilities were high for both negative affect ( $\alpha = .90$ ) and positive affect ( $\alpha = .92$ ).

*Psychological distress.* We measured psychological distress using the *Patient Health Questionnaire* (PHQ-9; Kroenke et al., 2001), General Anxiety Disorder measure (7 GAD7; García et al., 2010) and the *Brief Emotional Profiles Scale* - POMS (Andrade et al., 2010).

PHQ-9 (Kroenke et al., 2001) reflects the nine criteria specified in the diagnostic manual for the detection of depressive disorder. It includes nine items that are scored on a Likert-type response scale ranging from 0 = *Not at all* to 3 = *Almost every day*, and is used to evaluate the presence of depression symptoms in the previous two weeks. Scores  $\geq 7$  indicate the presence of depressive symptoms. In the present study, the PHQ-9 showed a good reliability (Cronbach’s  $\alpha = .87$ ). GAD-7 (García et al., 2010) assesses anxiety symptoms over the past two weeks using seven items that are scored on a Likert-type response scale ranging from 0 = *None of the days* to 3 = *Almost every day*, where a score  $\geq 10$  indicates the presence of anxiety symptoms. In the present study it showed a good reliability ( $\alpha = .87$ ). The *Brief Emotional Profiles Scale* - POMS (Andrade et al., 2010) measures six mood states by means of 30 items: Anger (e. g., “Angry”), fatigue (e. g., “Exhausted”), vigour (e. g., “Energetic”), friendliness (e. g., “Comprehensive”), tension (e. g., “Nervous”), and depression (e. g., “Alone”) that scored from 0 = *Not at all* to 4 = *Extremely*. They are emotional states, and therefore are variable depending on situations and context. Although the mood states can indicate the presence of possible psychopathologies, they lack clinical relevance and only indicate emotional profiles at the time of measurement. For the present study, internal consistency was adequate for anger ( $\alpha = .81$ ), fatigue ( $\alpha = .92$ ), vigour ( $\alpha = .92$ ), friendship ( $\alpha = .86$ ), tension ( $\alpha = .87$ ), and depression ( $\alpha = .83$ ).

For the evaluation of the program itself, a 20 items questionnaire with a Likert-type rating scale, from 1 = *Not at all satisfied* to 5 = *Very satisfied*, was developed ad-hoc. The factors assessed were the criteria followed in the program design: career perspective and motivation, perceived impact on well-being, perceived impact on social support, adequacy of the psycho-pedagogical approach, and feelings of respect and acknowledgment. Finally, an item asking whether participants would recommend the program to colleagues was also included.

### Statistical analyses

Data collection for this study was conducted using Kobo-Toolbox, and subsequent data analysis was performed with IBM SPSS Statistics version 27. Descriptive statistics such as frequencies and percentages were calculated for the sociodemographic data. To measure the internal quality of the measurement instruments, Cronbach's internal consistency analysis was used. A 2 x 2 (phase x group) factorial model analysis of variance (ANOVA) was planned to test hypothesis H1 and H2 for all the outcomes (satisfaction with life, positive and negative affect, anxiety, depression, and emotional profiles), with a between groups factor (intervention group vs. control group) and a within-subject factor (pre-program vs post-program). ANOVA was carried out in two related but different samples: (1) The total sample of 97 participants, made up of 26 subjects from the experimental group and 71 from the control group, and (2) a subset called "matched sample analysis", consisting of 40 participants –made up of 20 subjects from the experimental group and 20 subjects from the control group–. Second analysis was performed on order for statistically controlling baseline differences among the compared groups potentially induced by the lack of randomised allocation of study participant to the intervention or control group. In our study, we successfully matched 20 participants from the intervention group with individuals from the control group, out of an initial pool of 26. Cohen's kappa interrater reliability was  $k = .80$  (Cohen, 1960), and the differences were resolved by reaching an agreement between the two evaluators.

To account for covariates in the ANOVA, chi-square tests were carried out to examine whether the matched groups differed from one another on any of the demographic variables. The results revealed no significant differences on these variables, confirming the commensurability of the groups. To estimate the magnitude of the effects observed in the total sample, within-group effects in the intervention group were also estimated using Cohen's  $d$ . Conversely, for between-group effect size estimation in the total sample (post-test differences), Hedges'  $g$  was employed. This choice was premised on the disparity in sample sizes between the two groups, ensuring a robust analysis of the effect size across the entire dataset. Within the matched samples analysis, Cohen's  $d$  was computed for both within and between-group effect sizes. Finally, to evaluate the internal quality and levels of satisfaction in the program, we calculated the means and standard deviations obtained in each scale of the ad-hoc designed questionnaire, based on five activity design criteria: social connection, motivation, methods and techniques used in emotional well-being, research perspective, and perspectives of the self.

## Results

### Outcomes in total sample

There were no significant differences between groups in terms of the outcome variables at the pre-intervention stage.

Analysis of the total sample for life satisfaction showed a significant main effect of phase ( $F(1,94) = 8.63, p < .001$ ) and group ( $F(1,94) = 5.4, p = .02$ ); however, there was no phase by group interaction effect ( $F(1,94) = 2.71, p = .1$ ). The results suggest that both groups improved over time, but changes did not differ between groups. Analyses on the outcomes of positive and negative affect as assessed by PANAS showed a main effect of time for both positive affect ( $F(1,94) = 5.27, p = .02$ ) and negative affect ( $F(1,94) = 9.71, p < .001$ ), a significant main effect of group for positive affect ( $F(1,94) = 1.38, p = .24$ ), and a significant interaction effect of phase by group on negative affect ( $F(1,94) = 4.01, p = .04$ ). The results suggest that while both groups experienced improvements over time in positive and reductions in negative affect, the means differed between groups, indicating that the Third Half group showed a greater 18% decrease in negative affect compared to the control group, which showed a reduction of only 3.7%.

Similar to negative affect, the analysis for anxiety, as assessed by the GAD-7, showed a significant main effect of phase ( $F(1,94) = 11.34, p < .001$ ) and a significant phase by group interaction effect ( $F(1,94) = 1.9, p = .17$ ); however, there was no significant main effect of group ( $F(1,94) = 4.95, p = .02$ ). The results indicate that the Third Half intervention group showed a 34.4% decrease in anxiety symptoms from pre-test to post-test when compared to the control group, which reported a slighter reduction of 6.7%. Analysis of the total sample for PHQ-9 depression identified a significant main effect of both phase ( $F(1,94) = 11.95, p < .001$ ) and group ( $F(1,94) = 7.17, p < .001$ ). However, there was no significant interaction effect of phase by group on depression ( $F(1,94) = 2.06, p = .15$ ). The results suggest that depression symptoms decreased in both groups but were not significant.

As indicated in Table 2, participants in the Third Half exhibited significant a main effect of time in the POMS depression ( $F(1,94) = 6.63, p = .01$ ) and tension ( $F(1,94) = 14.8; p < .001$ ). However, the remaining variables, including friendship, fatigue, cholera, and vigour, did not show any main effects of time or group, nor did they exhibit any interaction effect of time by group.

### Outcomes in matched sample

In the matched sample analysis, satisfaction with life only showed a significant effect of phase ( $F(1,37) = 4.16, p = .04$ ). For positive and negative affect, the results from the total sample did not persist in the restricted sample, as an exception of the phase by group interaction effect on negative affect ( $F(1,37) = 4.72, p = .04$ ). For anxiety, the results from the total sample for the phase by group interaction persisted in the matched sample ( $F(1,37) = 4.09, p = .05$ ). However, in the analysis for PHQ-9 depression, no significant effect was found ( $F(1,37) = 1.54, p = .22$ ).

For POMS depression, effects endured in the matched sample (as compared to the total sample) as depression showed a significant phase by group interaction effect ( $F(1,37) = 4.95, p = .03$ ). Friendship showed a significant effect on phase

**Table 2***Outcomes (satisfaction with life, affect, anxiety, depression, and POMS): total sample*

Phase	Third Half ( <i>n</i> = 26)	Control ( <i>n</i> = 71)	Effect size (95% <i>CI</i> )		Effect of phase by group	
	Mean ( <i>SD</i> )	Mean ( <i>SD</i> )	Cohen's <i>d</i>	Hedges's <i>g</i>	<i>F</i>	<i>p</i>
SwF			0.53 (0.11; 0.93)	0.61 (0.15; 1.06)	2.71	.1
Pre	17.04 (4.81)	15.42 (4.46)				
Post	19.04 (3.75)	15.98 (5.35)				
PA			0.34 (-0.44; 1.1)	0.66 (0.2; 1.12)	1.38	.24
Pre	33.58 (8.01)	29.68 (8.29)				
Post	36.31 (8.58)	30.55 (8.72)				
NA			-0.54 (-1.24; -0.3)	-0.51 (-0.97; -0.06)	4.01	.04
Pre	24.12 (9.82)	25.39 (9.06)				
Post	19.77 (8.7)	24.45 (9.32)				
Anxiety			-0.63 (-1.05; -0.2)	-0.5 (-0.96; -0.05)	4.95	.02
Pre	7.81 (5.06)	8.14 (4.89)				
Post	5.12 (4.17)	7.59 (5.12)				
Depression (PHQ-9)			-0.57 (-0.99; -0.15)	-0.69 (-1.15; -0.22)	2.06	.15
Pre	6.77 (3.95)	9.1 (5.5)				
Post	4.65 (4.87)	8.23 (5.28)				
POMS						
Depression			-0.42 (-0.83; -0.02)	-0.42 (-0.87; 0.03)	3.53	.06
Pre	7.96 (5.04)	9.1 (5.5)				
Post	5.62 (5.46)	7.99 (5.68)				
Friendship			0.35 (-0.05; 0.74)	0.57 (0.12; 1.03)	4.33	.13
Pre	14.15 (4)	12.86 (3.92)				
Post	15.5 (4.09)	12.96 (4.51)				
Tension			-0.53 (-0.94; -0.11)	-0.39 (-0.85; 0.59)	1.51	.22
Pre	9.76 (5.06)	10.63 (4.96)				
Post	7.4 (4.86)	9.42 (5.15)				
Fatigue			-0.34 (-0.73; 0.05)	-0.47 (-0.93; -0.02)	2.71	.1
Pre	10.92 (6.08)	11.46 (5.22)				
Post	8.77 (4.99)	11.93 (4.93)				
Cholera			-0.37 (-0.77; 0.02)	-0.34 (-0.79; 0.11)	1.09	.29
Pre	6.49 (5.33)	6.9 (4.97)				
Post	4.71 (4.65)	6.23 (4.37)				
Vigour			0.51 (0.09; 0.91)	0.59 (0.13; 1.04)	1.6	.2
Pre	10.35 (4.33)	8.62 (4.71)				
Post	11.92 (4.39)	9.06 (5.01)				

*Note.* SwF = Satisfaction with Life; PA = Positive Affect; NA = Negative Affect; PHQ-9 = Patient Health; POMS = Questionnaire Profile of Mood States. Cohen's *d* within group comparisons pre- to post-test; Hedges's *g* between groups comparisons (post-test differences).

**Table 3***Outcomes (satisfaction with life, affect, anxiety, depression, and POMS): matched samples*

	Third Half ( <i>n</i> = 20)	Control ( <i>n</i> = 20)	Effect size (95% <i>CI</i> )		Effect of phase by group	
	Mean ( <i>SD</i> )	Mean ( <i>SD</i> )	Cohen's <i>d</i>	Hedges's <i>g</i>	<i>F</i>	<i>p</i>
SwL			0.43 (-0.02; 0.89)	0.00 (-0.62; 0.62)	0.95	.33
Pre	16.85 (4.49)	17.95 (3.53)				
Post	18.55 (3.84)	18.55 (5.01)				
PA			0.36 (-0.81; 0.09)	0.06 (-0.56; 0.68)	2.76	.1
Pre	32.3 (8.49)	35.6 (5.94)				
Post	35.5 (9.25)	35 (6.98)				
NA			-0.61 (-1.08; -0.12)	-0.12 (-0.74; 0.49)	4.72	.03
Pre	24.05 (9.84)	19.95 (9.46)				
Post	19.8 (9.4)	21 (10.03)				
Anxiety			-0.7 (-1.18; -0.2)	-0.11 (-0.73; 0.5)	4.09	.05
Pre	8 (4.75)	6.25 (3.98)				
Post	5.35 (4.61)	5.9 (4.93)				
Depression (PHQ-9)			-0.49 (-0.94; -0.02)	0.11 (-0.5; 0.73)	1.54	.22
Pre	7.10 (4.21)	6.15 (4.71)				
Post	5.15 (5.36)	5.75 (4.88)				
POMS						
Depression			-0.49 (-0.95; -0.02)	0.14 (-0.48; 0.75)	4.95	.03
Pre	8.2 (4.83)	4.4 (3.91)				
Post	6.2 (5.58)	5.45 (5.26)				
Friendship			0.57 (0.12; 1.03)	0.09 (-0.52; 0.71)	1.99	.16
Pre	13.75 (4.31)	14.8 (4.08)				
Post	15.8 (3.96)	15.4 (4.35)				
Tension			-0.39 (-0.07; 0.84)	0.05 (-0.57; 0.66)	1.4	.24
Pre	9.38 (4.97)	7.69 (5.66)				
Post	7.69 (5.08)	7.44 (5.37)				
Fatigue			-0.24 (-0.68; 0.2)	-0.07 (-0.69; 0.55)	2.07	.15
Pre	10.7 (6.68)	8.45 (5.05)				
Post	9.15 (5.05)	9.5 (4.89)				
Cholera			-0.3 (-0.74; 0.15)	0.14 (-0.48; 0.76)	1.77	.19
Pre	6.5 (5.42)	4 (4.12)				
Post	5.12 (5.09)	4.44 (4.59)				
Vigour			0.45 (0; 0.91)	0.06 (-0.55; 0.68)	1.7	.19
Pre	10.15 (4.64)	11.25 (4.12)				
Post	11.6 (4.65)	11.3 (4.1)				

*Note.* SwL = Satisfaction with Life; PA = Positive Affect; NA = Negative Affect; PHQ-9 = Patient Health; POMS = Questionnaire Profile of Mood States. Cohen's *d* within group comparisons pre- to post-test; Hedges's *g* between groups comparisons (post-test differences).

( $F(1,37) = 6.67; p = .01$ ) but the rest of the variables such as tension, fatigue, anger, and vigour did not exhibit any main effects of phase or group, nor did they exhibit any interaction effect of phase by group.

Third Half participants showed a reduction in negative affect by 17.6%, anxiety by 33.1%, and depressive symptoms by 24.4% for the matched samples, indicating that the program might potentially have a positive impact on the mental-health parameters of ECRs. The results are shown in Table 3.

## Discussion

The main objective of this study was to assess the efficacy of Third Half, a psychoeducational program designed to enhance well-being management among doctoral candidates. Results corroborate a previous pilot study (Muro, Bonilla et al., 2022), showing increased well-being and decreased psychological distress among participants. The program was implemented over 3 months, and changes in well-being and distress outcomes were compared with a control group. The findings suggest that the program's effectiveness is attributed to its design, based on five evidence-based psychological strategies. This replication study utilized different trainers and a biweekly schedule, addressing some methodological limitations of the pilot study. Overall, results indicate that the intervention effectively increases well-being (H1) and reduces distress (H2), with moderate effect sizes observed in pre-post comparisons and post-test differences with the control group.

However, caution is warranted regarding the matching subsample analysis, which showed similar pre-post variations in both groups, indicating parallel evolution rather than a clear program effect. Baseline differences in mental health indicators between participants and non-participants suggest self-selection bias, with those opting in already exhibiting better well-being. This raises concerns about the cost-effectiveness of the program and highlights the need to target individuals with risk factors. Few programs exist that develop well-being skills among doctoral students, particularly those measuring well-being indicators (Geber, 2010; Reche, 2022). Notably, participants in the Third Half program exhibited improvements in vigour and life satisfaction compared to the control group. These findings align with previous studies showing positive psychology interventions enhance life satisfaction (Lambert et al., 2019; Muro, Bonilla et al., 2022). Techniques such as gratitude exercises and strengths identification may foster self-efficacy and contribute to observed changes in well-being outcomes. Increases in positive affect and friendship further support the program's effectiveness, consistent with the pilot study (Muro, Bonilla et al., 2022).

Regarding the variables related to psychological distress, negative affect, anxiety and depression, compared to pre-intervention levels: these reductions may be attributed to the program's focus on developing positive qualities and strategies to enhance self-esteem, which can mitigate anxiety and depressive symptoms (Pasqualotto & Weber, 2022).

The intervention employed a combination of methods, including gamification activities that foster idea generation, commu-

nication, and teamwork in a supportive environment (Fitzgerald & Ratcliffe, 2020). Additionally, the program's humanistic and motivational teaching approaches (Ryan et al., 2008; Treve, 2021) and outdoor activities in green spaces, known for their mental health benefits, contributed to improvements in life satisfaction, mood, and emotional regulation (Muro et al., 2023).

In the matched samples analysis, significant pre-post increases in friendship and vigour, as well as reductions in negative affect, anxiety, and depressive symptoms, were observed in the Third Half group. This is notable given that the intervention lasted only three months, compared to six months in the pilot study, and involved a small sample size. These findings align with Suldo et al. (2014), who noted that while well-being indicators improved, no decreases in affect or psychopathology were observed. This suggests that multicomponent programs aimed at enhancing well-being can also alleviate mental health discomfort, a connection tentatively supported in our pilot study (Muro, Bonilla et al., 2022). Interestingly, despite the control group's better pre-program mental health, they improved independently of Third Half participation. This may result from our careful matching process based on age, gender, nationality, and pre-intervention scores, successfully pairing 20 intervention participants from an initial 26. Furthermore, these improvements may reflect the natural progression of their academic journey and the impact of external support systems, such as peer interactions and resources from the Doctoral School. Their initially higher mental health parameters could indicate greater resilience or more effective coping strategies, contributing to their positive adaptation during the study period.

The Third Half shows promise as an effective program across various researcher profiles and contexts. Institutions at the European level emphasize the need for public policies that promote well-being in academia (Kismihók et al., 2021; Ministry of Universities, 2023; OECD, 2021). However, there is limited research on interventions in academic careers. The pilot experience (Muro, Bonilla et al., 2022) and this study highlight the importance of preventive measures from academic institutions to support students and reduce dropout rates and psychological distress (Jiménez-Villamizar et al., 2023; Woolston, 2019). This study contributes valuable insights into the impact of evidence-based prevention programs in doctoral settings and underscores the need for ongoing implementation and validation of such programs to ensure comprehensive training and mitigate future mental health risks in research careers.

### *Limitations and further research*

While the results of the Third Half implementation are encouraging, the study has limitations, including a small sample size that affects generalizability and a 16% dropout rate. However, this dropout rate is lower than seen in similar studies (Cogollo et al., 2023). To address potential internal validity threats, we controlled for dropout by creating a matched sample of twenty doctoral students, showing no significant pretest differences between those who remained and those who dropped out. A second limitation relates to external validity, because the

program was only implemented at a single university. Hence, replication in other universities and cultural settings is a suggestion for future research to address the generalizability of the results. As a third point, future implementations could include alternative indicators such as motivational factors, relationship with supervisors, professional uncertainty, pressure to publish, as systemic indicators that could be relevant to improve well-being, but also encourage structural changes in the academic system. Without these fundamental changes, mental health support programs, although beneficial, may have a limited impact and not solve the essence of the problem.

Finally, a follow-up assessment is suggested for future studies design that could determine whether changes in the program are sustained in the medium and long term after implementation (Lim & Tierney, 2023; Ura et al., 2020), it is important to highlight that, within the Third Half program, early-career researchers are provided with tools to deal with stressful and challenging situations in their research career, as well as techniques to promote their general well-being. Such a follow up could also seek to establish whether the training also results in reduced doctoral dropouts, evidence that might be more compelling to university decision makers than solely an impact on well-being and mental health.

### Conclusions

Our findings indicate that the Third Half program has a positive impact on reducing negative affect by 17.6%, anxiety by 33.1%, and depressive symptoms by 24.4%. These results are important because they provide concrete evidence that multi-component psychoeducational training could be effective in managing the well-being of ECRs and reducing their distress. Following institutional coordination challenges at UAB, we urge other ERA institutions to address the mental health crisis among young researchers through evidence-based interventions that ensure quality, interdisciplinary training, and healthy research environments as strategic priorities (Levecque et al., 2017; Muro, Bonilla et al., 2022; WHO, 2022). Despite not addressing gender or nationality differences, the study provides valuable insight into the effectiveness of health promotion and prevention programmes that should be evaluated and based on evidence-based cost-benefit practices that are easily implementable in educational settings (Muro, Bonilla et al. 2022). In summary, our study demonstrates that it reduced psychological distress in the participating doctoral students, significantly contributing to adding evidence and improving knowledge of much-needed psychoeducational programs from academic settings to address the mental health threat that is affecting younger populations and students in the ERA (Kismihók et al., 2022; WHO, 2022).

### Author contributions

Conceptualization: M.P.J.-V, A.M.R.  
 Methodology: M.P.J.-V., A.M.R., I.V.-G., A.B.M., M.D.-A., R.L.-G., M.J.F.-G.  
 Formal analysis: M.P.J.-V., C.T.G., A.S., A.M.R., S.T.M.

Data curation: M.P.J.-V.

Writing – original draft: M.P.J.-V, A.M.R.

Writing – review & editing: M.P.J.-V., M.J., A.S., A.M.R., S.T.M.

Supervision: A.M.R.

Project administration: A.M.R.

### Funding

The Third Half intervention, data collection, and analysis received funding from the UAB-Campus SIS plan.

### Acknowledgments

The authors would like to thank Inmaculada Ponte, Manel Ebri, and Marta López-Sepúlveda from the UAB's Doctoral School; Silvia Altafaja, from the UAB's Vice-Rectorate for Campus, Sustainability and Territory; and Sonia Sánchez, from CORE- Salut Mental UAB, for facilitating the implementation of the Third Half at UAB; and the Horizon Europe (EU) funded Researchers' Mental Health Observatory (ReMO) Cost Action (CA19117), for their support and contribution to the dissemination of the program.

### Declaration of interests

The authors declare that there is no conflict of interest.

### Data availability statement

The data that support the findings of this study are openly available in OSF – Open Science Framework at [https://osf.io/pqym4/?view\\_only=055f1dc2a7ef4230b79e6d19cf53ca0e](https://osf.io/pqym4/?view_only=055f1dc2a7ef4230b79e6d19cf53ca0e).

### References

- Abreu, L. N., Oquendo, M. A., Galfavy, H., Burke, A., Grunebaum, M. F., Sher, L., Sullivan, G. M., Sublette, M. E., Mann, J., & Lafer, B. (2018). Are comorbid anxiety disorders a risk factor for suicide attempts in patients with mood disorders? A two-year prospective study. *European Psychiatry: The Journal of the Association of European Psychiatrists*, 47, 19-24. <https://doi.org/10.1016/j.eurpsy.2017.09.005>
- Andrade, E., Arce, C., Torrado, J., Garrido, J., De Francisco, C., & Arce, I. (2010). Factor structure and invariance of the POMS Mood State Questionnaire in Spanish. *The Spanish Journal of Psychology*, 13(1), 444-452. <https://doi.org/10.1017/s1138741600003991>
- Cahill, B., Schroijen, M., & Mol, S.T. (2023). Towards the creation of healthier academic environments in the European research area: mental health and well-being among early-stage researchers. In A. Muro & M. Jiménez-Villamizar (Eds.), *The third half: toward the creation of healthier research careers* (pp. 11-14). Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10005921>
- Charles, S., Karnaze, M. & Leslie, F. (2021). Positive factors related to graduate student mental health. *Journal of American College Health*, 70(6), 1858-1866. <https://doi.org/10.1080/07448481.2020.1841207>
- Cogollo-Milanés, Z., Gómez Bustamante, E., & Campo Arias, A. (2023). Program effectiveness for the prevention of psychoactive

- substance use among university students. *Revista Facultad Nacional de Salud Pública*, 41(3), Article e351578. <https://doi.org/10.17533/udea.rfnsp.e351578>
- Cohen J. (1960) A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20(1), 37-46. <https://doi.org/10.1177/001316446002000104>
- Devoto, M., Borrueco, M., Jordana, A., Torregrossa, M., & Ramis, Y. (2023). Physical activity, well-being and mental health prevention. In A. Muro & M. Jiménez-Villamizar (Eds.), *The third half: toward the creation of healthier research careers* (pp. 31-37). Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10005929>
- European Commission. (2011). *Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions*. [https://www.europarl.europa.eu/meetdocs/2009\\_2014/documents/com/com\\_com\(2011\)0681/\\_com\\_com\(2011\)0681\\_en.pdf](https://www.europarl.europa.eu/meetdocs/2009_2014/documents/com/com_com(2011)0681/_com_com(2011)0681_en.pdf)
- Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology*, 36(3), 282-284. <https://doi.org/10.1038/nbt.4089>
- Fitzgerald, M., & Ratcliffe, G. (2020). Serious games, gamification, and serious mental illness: A scoping review. *Psychiatric Services*, 71(2), 170-183. <https://doi.org/10.1176/appi.ps.201800567>
- García-Campayo, J., Zamorano, E., Ruiz, M. A., Pardo, A., Pérez-Páramo, M., López-Gómez, V., Freire, O., & Rejas, J. (2010). Cultural adaptation into Spanish of the generalized anxiety disorder-7 (GAD-7) scale as a screening tool. *Health and Quality of Life Outcomes*, 8, Article 8. <https://doi.org/10.1186/1477-7525-8-8>
- Geber, H. (2010). Coaching for accelerated research productivity in higher education. *International Journal of Evidence Based Coaching and Mentoring*, 8(2), 64-79.
- González-Betancor, S., Dorta-González, P. (2020). Risk of interruption of doctoral studies and mental health in PhD students. *Mathematics*, 8(10), Article 1695. <https://doi.org/10.3390/math8101695>
- Jiménez-Villamizar, M., Muro, A., Carmona, M., Cladellas, R., Feliu-Soler, A., Reche, E., López-Fernández, D., Méndez-Ulrich, J., Selva, C., & Sanz, A. (2023). Predictive factors of the psychological impact of the COVID-19 pandemic on university students: A cross-cultural study in six Ibero-American countries. *Anxiety and Stress*, 29(3), 153-162. <http://dx.doi.org/10.2139/ssrn.4437025>
- Kismihók, G., Cahill, B., Gauttier, S., Metcalfe, J., Mol, S. T., McCashin, D., Lasser, J., Günes, M., Schrijen, M., Grund, M., Levecque, K., Guthrie, S., Wac, K., Dahlgard, J. O., Nadim Adi, M., & Kling, C. (2021). *Researcher mental health and well-being manifesto*. Zenodo. <https://doi.org/10.5281/zenodo.5788557>
- Kismihók, G., McCashin, D., Mol, S. T., & Cahill, B. (2022). The well-being and mental health of doctoral candidates. *European Journal of Education*, 57(4), 410-423. <https://doi.org/10.1111/ejed.12519>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606-613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Lambert, L., Passmore, H., & Joshanloo, M. (2019). A positive psychology intervention program in a culturally diverse university: Boosting happiness and reducing fear. *Journal of Happiness Studies*, 20, 1141-1162. <https://doi.org/10.1007/s10902-018-9993-z>
- Lane, L., & De Wilde, J. (2018). The impact of coaching doctoral students at a university in London. *International Journal of Evidence Based Coaching and Mentoring*, 16(2), 55-68. <https://doi.org/10.24384/000561>
- Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research Policy*, 46(4), 868-879. <https://doi.org/10.1016/j.respol.2017.02.008>
- Lim, W. L., & Tierney, S. (2023). The effectiveness of positive psychology interventions for promoting well-being of adults experiencing depression compared to other active psychological interventions: A systematic review and meta-analysis. *Journal of Happiness Studies*, 24(1), 249-273. <https://doi.org/10.1007/s10902-022-00598-z>
- Manzano-León, A., Camacho-Lazarraga, P., Guerrero, M., Guerrero-Puerta, L., Aguilar-Parra, J. M., Trigueros, R., & Alias, A. (2021). Between level up and game over: A systematic literature review of gamification in education. *Sustainability*, 13(4), Article 2247. <https://doi.org/10.3390/SU13042247>
- Martínez-Nicolás, I., García-Girón, J. (2021). “No future for you”: Economic and mental health risks in young Spanish researchers. In D. L. Mulligan & P. A. Danaher (Eds.), *Researchers at risk: Precarity, Jeopardy and Uncertainty in Academia* (pp. 103-114). Palgrave Macmillan. [https://doi.org/10.1007/978-3-030-53857-6\\_7](https://doi.org/10.1007/978-3-030-53857-6_7)
- Milicev, J., McCann, M., Simpson, S. A., Biello, S. M., & Gardani, M. (2023). Evaluating mental health and well-being of postgraduate researchers: Prevalence and contributing factors. *Current Psychology*, 42, 12267-12280. <https://doi.org/10.1007/s12144-021-02309-y>
- Ministry of Universities. (2023). *Mental health in students at Spanish Universities*. <https://www.universidades.gob.es/estudio-sobre-la-salud-mental-en-el-estudiantado-de-las-universidades-espanolas/>
- Muro, A., & Jiménez-Villamizar, M. (2023). *Third Half: towards the creation of healthier research careers*. Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10004671>
- Muro, A., Bonilla, I., Tejada-Gallardo, C., Jiménez-Villamizar, M. P., Cladellas, R., Sanz, A., & Torregrossa, M. (2022). The third half: A pilot study using evidence-based psychological strategies to promote well-being among doctoral students. *International Journal of Environmental Research and Public Health*, 19(24), Article 16905. <https://doi.org/10.3390/ijerph192416905>
- Muro, A., Feliu-Soler, A., Canals, J., Parrado, E., & Sanz, A. (2022). Psychological benefits of Forest Bathing during the COVID-19 pandemic: A pilot study in a Mediterranean forest close to urban areas. *Journal of Forest Research*, 27(1), 71-75. <https://doi.org/10.1080/13416979.2021.1996516>
- Muro, A., Mateo, C., Parrado, E., Subirana-Malaret, M., Moya, M., Garriga, A., Canals, J., Chamarro, A., & Sanz, A. (2023). Forest bathing and hiking benefits for mental health during the COVID-19 pandemic in Mediterranean regions. *European Journal of Forest Research*, 142(2), 415-426. <https://doi.org/10.1007/s10342-023-01531-6>
- Nori, H., & Vanttaja, M. (2023). Too stupid for PhD? Doctoral impostor syndrome among Finnish PhD students. *Higher Education*, 86, 675-691. <https://doi.org/10.1007/s10734-022-00921-w>
- OECD. (2021). *Reducing the precarity of academic research careers*. OECD Science, Technology and Industry Policy Papers (Nº. 113). <https://doi.org/10.1787/0f8bd468-en>
- Park, K. E., Sibalis, A., & Jamieson, B. (2021). The mental health and well-being of master's and doctoral psychology students at an urban Canadian university. *International Journal of Doctoral Studies*, 16, 429-447. <https://doi.org/10.28945/4790>
- Pasqualotto, R., & Weber, L. (2022). Psicologia positiva na universidade: Um estudo correlacional. *Research, Society and Development*, 11(1), 1-8. <http://dx.doi.org/10.33448/rsd-v11i1.25216>

- Reche, E., Duran, M., Bajona, C., Farnés, M., Monferrer, M. C., Feliu-Soler, A., & Muro, A. (2023). *Research yourself: Analysing the effects of coaching psychology among doctoral candidates*. 1st conference of the Researcher Mental Health Observatory: bridging science and practice in supporting researcher mental health (ReMO 2022), Budapest, Hungary. <https://doi.org/10.5281/zenodo.7535000>
- REMO. (2023). *ReMO COST Action CA19117: "Researcher mental health"*. <https://projects.tib.eu/remo/>
- Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2008). Facilitating health behaviour change and its maintenance: Interventions based on self-determination theory. *European Psychologist*, *10*, 2.
- Schmidt, M., & Hansson, E. (2018). Doctoral students' well-being: A literature review. *International Journal of Qualitative Studies on Health and Well-Being*, *13*(1), Article 1508171. <https://doi.org/10.1080/17482631.2018.1508171>
- Suldo, S., Savage, J., & Mercer, S. (2014). Increasing middle school students' life satisfaction: Efficacy of a positive psychology group intervention. *Journal of Happiness Studies*, *15*, 19-42. <https://doi.org/10.1007/s10902-013-9414-2>
- Sverdlik, A., Hall, N. C., & McAlpine, L. (2020). PhD imposter syndrome: Exploring antecedents, consequences, and implications for doctoral well-being. *International Journal of Doctoral Studies*, *15*, 737-758. <https://doi.org/10.28945/4670>
- Treve, M. (2021). Study of humanistic education: Concerns, implications, and applications. *Turkish Journal of Computer and Mathematics Education*, *12*(11), 6303-6310. <https://doi.org/10.17762/turcomat.v12i11.7005>
- Twenge, J. M., & Joiner, T. E. (2020). Mental distress among U.S. adults during the COVID-19 pandemic. *Journal of Clinical Psychology*, *76*(12), 2170-2182. <https://doi.org/10.1002/jclp.23064>
- United Nations. (2022). *Securing the well-being of people and planet*. <https://www.un.org/en/content/summits2022/>
- Valeeva, E., Ziyatdinova, J., & Galeeva, F. (2020). Development of soft skills by doctoral students. In M. Auer, H. Hortsch, P. Sethakul (Eds.), *The impact of the 4th industrial revolution on engineering education. ICL 2019. Advances in Intelligent Systems and Computing*. Springer. [https://doi.org/10.1007/978-3-030-40271-6\\_17](https://doi.org/10.1007/978-3-030-40271-6_17)
- Vázquez, C., & Hervás, G. (2018). *Psicología positiva aplicada* (2nd ed.). Desclée de Brouwer.
- Vázquez, C., Duque, A., & Hervás, G. (2013). Satisfaction with Life Scale in a representative sample of Spanish adults: Validation and normative data. *The Spanish Journal of Psychology*, *16*, Article E82. <https://doi.org/10.1017/sjp.2013.82>
- Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063-1070. <https://doi.org/10.1037/0022-3514.54.6.1063>
- Woolston, C. (2019). PhDs: the tortuous truth. *Nature*, *575*(7782), 403-407. <https://doi.org/10.1038/d41586-019-03459-7>
- World Health Organization (WHO). (2022). *Mental health*. <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
- Zwart, H., Landeweerd, L., & Van Rooij, A. (2014). Adapt or perish? Assessing the recent shift in the European research funding arena from 'ELSA' to 'RRI'. *Life Sciences, Society and Policy*, *10*, Article 11. <https://doi.org/10.1186/s40504-014-0011-x>

**4. Artículo 4\*:**

Jiménez-Villamizar, M, Martínez-Blanquet, L., Sanz, A., Muro-Rodríguez, A. (2025). Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural. *Duazary*, 20(4), 233-241. <https://doi.org/10.21676/2389783X.5579>

*\*El Artículo 4 se realizó durante una estancia predoctoral en la Universidad Autónoma San Luis Potosí (San Luis Potosí, México) entre el 1 de marzo al 3 junio del 2024. Por tanto, a través de esta tesis doctoral se opta a la mención de Doctorado Internacional*



Artículo de Artículos de investigación científica y tecnológica

# Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural

## Mental health and well-being in Mexican and Spanish doctoral students: A cross-cultural study

María Paola Jiménez-Villamizar<sup>1</sup> \* Luis Javier Martínez-Blanquet<sup>2</sup> \* Antoni Sanz<sup>3</sup>  
Ana Muro-Rodríguez<sup>4</sup>

**Para citar este artículo:** Jiménez-Villamizar MP, Martínez-Blanquet LJ, Sanz A, Muro-Rodríguez A. Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural. Duazary. 2025;22:e6404. <https://doi.org/10.21676/2389783X.6404>

Recibido en febrero 20 de 2025

Aceptado en marzo 10 de 2025

Publicado en línea en marzo 22 de 2025

### RESUMEN

**Introducción:** el bienestar disminuido y la alta angustia entre doctorandos son preocupaciones crecientes en educación superior e investigación. **Objetivo:** analizar y contrastar características sociodemográficas, indicadores de bienestar y malestar emocional en estudiantes de doctorado mexicanos y españoles. **Método:** estudio observacional, analítico y transversal. La información se recolectó mediante un cuestionario en línea que incluyó indicadores de bienestar y malestar emocional. **Resultados:** Participaron 351 estudiantes de doctorado (192 mexicanos y 159 españoles). Los doctorandos en España mostraron menores niveles de bienestar emocional y mayores indicadores de malestar emocional en comparación con sus pares mexicanos. Ser estudiante internacional ( $\chi^2 = 38,09$ ;  $p < 0,01$ ) y la edad ( $\chi^2 = 0,16$ ;  $p < 0,01$ ) emergieron como factores de riesgo para problemas de salud mental. **Conclusiones:** las diferencias en salud mental según el país sugieren que factores académicos y culturales pueden influir en el bienestar de los doctorandos. Estos hallazgos resaltan la necesidad de fortalecer las estrategias institucionales de apoyo psicológico y formación en competencias para la gestión del estrés en la comunidad doctoral.

**Palabras clave:** estudiantes; salud mental; bienestar; estudios transculturales.

### ABSTRACT

**Introduction:** Decreased well-being and high distress among doctoral students are growing concerns in higher education and research. **Objective:** To analyze and contrast sociodemographic characteristics, well-being indicators, and emotional distress in Mexican and Spanish doctoral students. **Method:** Observational, analytical, and cross-sectional study. Information was collected through an online questionnaire that included indicators of well-being and emotional distress. **Results:** Three hundred fifty-one doctoral students, 192 Mexican and 159 Spanish, participated. Doctoral students in Spain showed lower levels of emotional well-being and higher indicators of emotional distress compared to their Mexican peers. Being an international student ( $\chi^2 = 38.09$ ;  $p < 0.01$ ) and age ( $\chi^2 = 0.16$ ;  $p < 0.01$ ) emerged as risk factors for mental health problems. **Conclusions:** Differences in mental health by country suggest that academic and cultural factors may influence the well-being of PhD students. These findings highlight the

---

1. Universidad Autónoma de Barcelona. Barcelona, España. Correo: mariapaola.jimenez@autonoma.cat - <https://orcid.org/0000-0003-2264-7422>

2. Universidad Autónoma San Luis Potosí. San Luis de Potosí, México. Correo: luis.blanquet@uaslp.mx - <https://orcid.org/0000-0002-7644-4025>

3. Universidad Autónoma de Barcelona. Barcelona, España. antonio.sanz@uab.cat - <https://orcid.org/0000-0002-7952-4477>

4. Universidad Autónoma de Barcelona. Barcelona, España. Correo: anna.muro@uab.cat - <https://orcid.org/0000-0002-1331-9921>

need to strengthen institutional strategies for psychological support and training in stress management skills in the doctoral community.

**Keywords:** Students; Mental health; Well-being; Cross-cultural studies.

## INTRODUCCIÓN

Durante la última década, el bienestar emocional y la salud mental de los estudiantes de doctorado en Europa y Estados Unidos han empeorado. Estudios indican un aumento sostenido de la sintomatología ansioso-depresiva y un riesgo mayor que en la población general.<sup>1,2</sup> Factores como la incertidumbre laboral, la presión por publicar y la alta competitividad contribuyen a este deterioro, especialmente en jóvenes investigadores.<sup>3,4</sup> Además, la movilidad internacional expone a los doctorandos a desafíos culturales y académicos, lo que aumenta la sensación de soledad.<sup>5</sup> Estos factores, junto con diferencias individuales y supervisión inadecuada, pueden incrementar la vulnerabilidad a problemas de salud mental.<sup>3,6</sup>

Aunque, se han realizado numerosos estudios en Europa y Estados Unidos, los datos sobre la salud mental de doctorandos e investigadores en etapas tempranas son muy limitados en América Latina. Un estudio realizado en México con estudiantes de posgrado y doctorado reveló que aproximadamente 35% cumplía con los criterios diagnósticos para al menos un trastorno mental común.<sup>7</sup> Asimismo, durante la pandemia de COVID-19 se encontró que 17% manifestaba tener problemas emocionales y 14% sensación de aislamiento y soledad.<sup>8</sup> En Europa,<sup>9,10</sup> y concretamente en España,<sup>2,11</sup> el panorama podría ser peor, con tasas de síntomas ansiosos y depresivo entre 40% y 50% durante y después de la pandemia. A pesar que los estudiantes doctorales se caracterizan por un alto grado de satisfacción y motivación en el trabajo, 39% informan síntomas de ansiedad y depresión;<sup>11</sup> 40%, alto riesgo suicida; 80%, síntomas de desgaste laboral y agotamiento emocional;<sup>12</sup> y 42%, está en riesgo de problemas de salud mental.<sup>13</sup> Estas cifras resultan alarmantes, ya que revelan un problema de malestar emocional ampliamente extendido en esta población, el cual podría afectar negativamente la producción científica de las universidades en las que los doctorandos desempeñan un rol como investigadores en etapas tempranas, lo que podría reducir la calidad y la cantidad de publicaciones.<sup>14</sup>

Sin embargo, es inadecuado generalizar estos hallazgos a otras regiones del mundo como Latinoamérica, dado que pueden ser otros factores más sensibles a variaciones culturales o sistémicas los que pueden repercutir en la salud mental de los investigadores en formación. Es importante destacar que el carácter transcultural de este estudio radica en su capacidad para comparar, en un contexto global, cómo dos culturas diferentes enfrentan los desafíos de la formación doctoral. Esto permite comprender las dinámicas que subyacen al bienestar y malestar psicológico, y proporciona información valiosa para la implementación de estrategias específicas que promuevan entornos académicos más saludables y sostenibles.

El objetivo de este estudio fue analizar y comparar los indicadores de bienestar emocional y malestar psicológico en estudiantes de doctorado en México y España. Se plantearon las siguientes hipótesis: (H1) los doctorandos mexicanos presentarían mayores niveles de bienestar emocional que los españoles; y (H2) los niveles de malestar psicológico serían más altos en estudiantes españoles en comparación con los mexicanos, si se considera que el contexto académico europeo es más competitivo y exigente. Asimismo, se exploraron las diferencias sociodemográficas entre los doctorandos para comprender mejor su posible relación con la salud mental.

## MÉTODO

### Tipo de estudio y participantes

Se realizó un estudio observacional, analítico y transversal. La muestra fue seleccionada mediante un muestreo no probabilístico por conveniencia. Se incluyeron estudiantes de doctorado matriculados en universidades de España y México que aceptaran participar voluntariamente mediante la firma del consentimiento informado. Se excluyeron los estudiantes que no completaron la totalidad de los cuestionarios o cuyos datos presentaban inconsistencias en las respuestas.

### Instrumentos

#### *Cuestionario sociodemográfico*

Este cuestionario recopiló preguntas como edad, sexo, año de doctorado, país de origen, si es estudiante internacional o intercambio y país en el que estudia actualmente (España o México).

#### *Bienestar emocional*

La Escala de Satisfacción con la Vida,<sup>15</sup> es una medida válida y confiable que mide la satisfacción global con la vida. Consta de 5 ítems con puntuaciones del uno al siete. En este estudio se observó una consistencia interna óptima, alfa de Cronbach de 0,85.

La Escala de Afecto Positivo y Negativo – PANAS,<sup>16</sup> evalúa experiencias afectivas mediante 20 ítems, diez de los cuales miden el afecto positivo-placentero y 10 que miden el afecto negativo-desagradable. Las respuestas se proporcionaron en una escala de respuesta de tipo Likert con cinco opciones de respuesta que van desde uno a cinco; las puntuaciones más altas una mayor positividad. La confiabilidad de la escala de afecto negativo en este estudio fue alta tanto para el afecto negativo, alfa de Cronbach de 0,92; como para el afecto positivo, alfa de Cronbach de 0,93.

#### *Malestar emocional*

El Cuestionario de Salud del Paciente (Patient Health Hospital; PHQ-9),<sup>17</sup> incluye nueve ítems que se puntúan en una escala de respuesta de tipo Likert que va de cero a tres, y se utiliza para evaluar la presencia de síntomas de depresión en las dos semanas previas según los criterios diagnósticos del Manual Diagnóstico y Estadístico de Trastornos Mentales (DSM-5). Las puntuaciones iguales o superiores a cinco indican la presencia de sintomatología depresiva. En el presente estudio, el PHQ-9 mostró una buena confiabilidad, alfa de Cronbach de 0,87.

La Escala del Trastorno de Ansiedad Generalizada (Generalized Anxiety Disorder; GAD-7),<sup>18</sup> evalúa los síntomas de ansiedad durante las últimas dos semanas, mediante siete ítems según los criterios diagnósticos del DSM-5, con cuatro opciones de respuesta. Se puntúa de cero a tres, donde una puntuación de cinco o más indica la presencia de sintomatología ansiedad. En este estudio, mostró una buena confiabilidad, alfa de Cronbach de 0,90.

La Escala de Perfiles Emocionales Breves (Profiles of Mood States; POMS),<sup>19</sup> se compone de 30 ítems que se califican de cero a cuatro, y mide 6 estados de ánimo: ira, fatiga, vigor, amabilidad, tensión y depresión experimentados en el momento. Son estados emocionales, y por tanto son variables según las situaciones y el contexto. En este estudio, se reportó una consistencia interna óptima para todas las subescalas: cólera (alfa de Cronbach de 0,90), fatiga (alfa de Cronbach de 0,91), vigor (alfa de Cronbach de 0,91), amistad (alfa de Cronbach de 0,83), tensión (alfa de Cronbach de 0,89) y depresión (alfa de Cronbach de 0,88).

### **Procedimiento y recolección de la información**

La encuesta fue distribuida a los estudiantes de doctorado mediante un correo electrónico enviado por la Escuela de Doctorado y los programas de doctorado de cada universidad participante. El correo incluía un enlace a un formulario en línea creado en Kobotoolbox, donde los participantes completaban los cuestionarios de manera anónima. La encuesta recogió datos sociodemográficos, indicadores de bienestar y malestar psicológico, e incluyó un consentimiento informado detallado.

### **Análisis estadísticos**

El análisis estadístico se realizó con IBM-SPSS versión 27. Los datos categóricos se reportaron en frecuencias absolutas y relativas. Para los datos cuantitativos, se evaluó la normalidad mediante la prueba de Kolmogorov-Smirnov, determinando que todas las variables presentaban una distribución no paramétrica ( $p < 0,05$ ). En consecuencia, se emplearon pruebas no paramétricas, más adecuadas para este tipo de datos: la prueba U de Mann-Whitney para comparar variables continuas entre grupos y la prueba de chi-cuadrado ( $\chi^2$ ) para analizar diferencias en variables categóricas.

Para evaluar el aspecto transcultural, se incluyó en el cuestionario la variable país de estudio actual (España o México), lo que permitió dividir a los participantes en dos grupos para realizar análisis comparativos entre ambos contextos educativos, se realizó un análisis de varianza multivariado (MANOVA) con bootstrapping, técnica que refuerza la estabilidad de las estimaciones en muestras moderadas y con datos no normales. La confiabilidad de los instrumentos se verificó mediante el alfa de Cronbach, asegurando una adecuada consistencia interna. En todos los análisis se estableció un nivel de significancia de  $p < 0,05$ , garantizando la validez de los resultados y su adaptación a la naturaleza de los datos.

### **Declaración sobre aspectos éticos**

Este estudio cumplió con las consideraciones de principios y normas éticas a través de la implementación del consentimiento para participar en el estudio, el cual cumple con las normas establecidas por la Declaración de Helsinki de 2024,<sup>20</sup> sobre los principios éticos en las investigaciones médicas en seres humanos. Todos los participantes aceptaron participar mediante firma de un consentimiento informado virtual, donde se explicó que la información se manejaría bajo estricta confidencialidad por el grupo de investigadores y los datos sólo se usarían para fines científicos y académicos. El proyecto contó con la aprobación de la Comisión de Ética en la Experimentación Animal y Humana (CEEAH) de la Universitat Autònoma de Barcelona, reunida el día 16-12-2022, acuerda informar favorablemente el proyecto con número de referencia CEEAH6007.

## RESULTADOS

### Características sociodemográficas en doctorandos de México y España

El cuestionario fue enviado a 1.420 estudiantes de doctorado, de los cuales 351 completaron el cuestionario, con una tasa de respuesta de 24,71%. De ellos, 192 eran mexicanos y 159 españoles, con edades entre 23 y 62 años ( $Me = 31$ ;  $RIC = 10$ ). Para ser elegibles para el estudio, los participantes debían ser estudiantes activos presenciales matriculados en programas de doctorado de la UASLP, la UACM y la UAB.

El 55% eran estudiantes de universidades mexicanas, con participación de 55,73% de mujeres, 8,85% estudiantes internacionales y 37,50% estaban en su tercer año o más. En contraste, 45% de los participantes eran estudiantes de una universidad española, con una mayor proporción de mujeres (66,67%), un porcentaje significativamente mayor de estudiantes internacionales (35,85%) y una mayor representación de doctorandos de primer año (43,40%). Los resultados mostraron diferencias significativas en la proporción de estudiantes internacionales ( $\chi^2 = 38,09$ ;  $p < 0,01$ ); esto fue mayor en España que en México. Asimismo, los participantes mexicanos mostraron una edad promedio significativamente mayor que los españoles ( $\chi^2 = 0,16$ ;  $p < 0,01$ ;  $r = 0,14$ ). Las características sociodemográficas de los participantes se detallan en la tabla 1.

**Tabla 1.** Características sociodemográficas de los estudiantes de doctorado participantes.

Variable		Total		México		España		$\chi^2$	$p$
Variable	Categorías	n	%	n	%	n	%		
Género	Masculino	134	38,18	83	43,23	51	32,08	4,58	0,10
	Femenino	213	60,68	107	55,73	106	66,67		
	No binario	4	1,14	2	1,04	2	1,26		
Año de doctorado	1º	131	37,32	62	32,29	69	43,40	5,04	0,08
	2º	94	26,78	58	30,21	36	22,64		
	3º o más	126	35,90	72	37,50	54	33,96		
Estudiante internacional	Sí	74	21,08	17	8,85	57	35,85	38,09	0,01
	No	277	78,92	175	9,15	102	64,15		
Variable		$Me$ (RIC)		$Me$ (RIC)		$Me$ (RIC)		$Z$	$p$
Edad (en años)		31 (10)		33 (10)		29 (9)			

$Me = Mediana$ ;  $RIC = Rango$  Intercuartílico.

### Bienestar emocional en doctorandos de México y España

Se observaron diferencias significativas en todos los indicadores de bienestar emocional, lo que fue más altos en estudiantes mexicanos en amistad ( $Z = -2,72$ ;  $p < 0,01$ ;  $r = 0,15$ ), vigor ( $Z = -3,17$ ;  $p < 0,01$ ;  $r = 0,17$ ), afecto positivo ( $Z = -4,70$ ;  $p < 0,01$ ;  $r = 0,25$ ) y satisfacción con la vida ( $Z = -6,06$ ;  $p < 0,01$ ;  $r = 0,32$ ), este último con un tamaño del efecto moderado. Estos resultados confirman la hipótesis H1, en la que se planteaba que los doctorandos mexicanos presentarían mayores niveles de bienestar emocional en comparación con los españoles.

**Tabla 2.** Bienestar en doctorandos de México y España.

Variable	México	España	<i>U de Mann-Whitney</i>	
	<i>Me (RIC)</i>	<i>Me (RIC)</i>	<i>Z</i>	<i>p</i>
Amistad	14 (7)	13 (6)	-2,72	< 0,01
Vigor	10 (7)	8 (6)	-3,17	< 0,01
Afecto positivo	33 (12)	29 (11)	-4,70	< 0,01
Satisfacción con la vida	18 (7)	14 (9)	-6,06	< 0,01

*Me = Mediana; RIC = Rango Intercuartílico.*

### Malestar emocional en doctorandos de México y España

Asimismo, se encontró que, en cinco de siete indicadores de malestar emocional evaluados, los estudiantes españoles mostraron puntuaciones más altas: cólera ( $Z = -3,11$ ;  $p < 0,01$ ;  $r = 0,17$ ), depresión POMS ( $Z = -2,53$ ;  $p = 0,01$ ;  $r = 0,14$ ), afecto negativo ( $Z = -3,42$ ;  $p < 0,01$ ;  $r = 0,18$ ), síntomas de ansiedad ( $Z = -2,41$ ;  $p = 0,02$ ;  $r = 0,13$ ) y síntomas de depresión ( $Z = -2,77$ ;  $p < 0,01$ ;  $r = 0,15$ ). Ver tabla 3. Aunque las subescalas de tensión y fatiga siguieron la misma tendencia (mayores en España), no alcanzaron significación estadística. Estos hallazgos validan la hipótesis H2, que planteaba que los niveles de malestar psicológico serían más altos en los estudiantes españoles en comparación con los mexicanos.

**Tabla 3.** Malestar psicológico en doctorandos de México y España.

Variable	México	España	<i>U de Mann-Whitney</i>	
	<i>Me (RIC)</i>	<i>Me (RIC)</i>	<i>Z</i>	<i>p</i>
Cólera	5 (7)	7 (9)	-3,11	< 0,01
Fatiga	12 (9)	13 (8)	-0,78	0,43
Tensión	10 (9)	11 (7)	-1,87	0,06
Depresión POMS	6 (10)	8 (9)	-2,53	0,01
Afecto Negativo	20 (17)	25 (14)	-3,42	< 0,01
Síntomas de ansiedad	7 (6)	8 (7)	-2,41	0,02
Síntomas de depresión	7 (7)	8 (8)	-2,77	< 0,01

*Me = Mediana; RIC = Rango Intercuartílico.*

### Análisis multivariado bienestar y malestar psicológico en doctorandos de México y España

En la tabla 4, en el análisis de varianza multivariado (MANOVA) mostró un efecto significativo del país de estudio en los indicadores de bienestar y malestar emocional ( $\Lambda = 0,845$ ;  $p < 0,001$ ). En los análisis univariados, se encontró que los estudiantes mexicanos reportaron mayor satisfacción con la vida ( $F = 45,59$ ;  $p < 0,001$ ;  $\eta^2p = 0,12$ ), afecto positivo ( $F = 26,82$ ;  $p < 0,001$ ;  $\eta^2p = 0,07$ ) y vigor ( $F = 11,04$ ;  $p = 0,001$ ;  $\eta^2p = 0,03$ ). En contraste, los estudiantes españoles presentaron mayores niveles de cólera ( $F = 10,06$ ;  $p = 0,002$ ;  $\eta^2p = 0,02$ ), afecto negativo ( $F = 10,57$ ;  $p < 0,01$ ;  $\eta^2p = 0,03$ ) y síntomas de ansiedad ( $F = 6,29$ ;  $p = 0,01$ ;  $\eta^2p = 0,02$ ).

Entre todas las variables analizadas, la satisfacción con la vida presentó la mayor varianza explicada por el país de estudio (11,30%), lo que sugiere un efecto moderado del contexto académico y cultural en esta dimensión del bienestar. En contraste, el resto de las variables presentaron efectos pequeños, aunque significativos, lo que indica que, si bien el contexto influye en la salud mental de los doctorandos, su impacto es más notable en el bienestar que en el malestar emocional.

**Tabla 4.** Bienestar y malestar psicológico en doctorandos de México y España.

Variable	<i>F</i>	<i>p</i>	<i>R</i> <sup>2</sup> ajustado
Amistad	7,92	0,01	0,01
Vigor	11,04	0,01	0,02
Afecto Positivo	26,82	0,01	0,06
Satisfacción con la vida	45,59	0,01	0,11
Cólera	10,06	0,01	0,02
Fatiga	0,79	<b>0,37</b>	-0,01
Tensión	4,10	0,04	0,01
Depresión (POMS)	5,07	0,02	0,01
Afecto Negativo	10,57	0,01	0,02
Ansiedad (GAD-7)	6,29	0,01	0,01
Depresión (PHQ-9)	4,38	0,03	0,01

*F* = Estadístico *F* de Fisher; *R*<sup>2</sup> = Coeficiente de determinación ajustado.

## DISCUSIÓN

Los hallazgos del estudio confirman la hipótesis H1, lo que muestra que los doctorandos mexicanos presentan niveles significativamente más altos de bienestar emocional en comparación con los españoles. En particular, reportaron mayores niveles de amistad, vigor, afecto positivo y satisfacción con la vida, hallazgos consistentes con estudios previos en estudiantes universitarios de grado.<sup>9</sup>

Por otro lado, el análisis respalda la hipótesis H2; esto evidencia que los doctorandos españoles experimentan un mayor malestar emocional, con niveles más altos de cólera, afecto negativo y sintomatología de depresión y ansiedad. Estos hallazgos refuerzan la influencia del contexto académico y cultural en la salud mental de los investigadores en formación y sugieren que los factores sistémicos, como el clima institucional y la percepción del apoyo social, pueden ser más determinantes que los factores individuales.<sup>1</sup>

Es importante destacar que los estudiantes españoles, en comparación con los mexicanos, mostraron una proporción significativamente mayor de doctorandos internacionales (36% frente a 9%), lo que sugiere una mayor movilidad internacional en España. La literatura ha identificado que los estudiantes internacionales enfrentan mayores niveles de estrés debido a la adaptación cultural,<sup>21</sup> la discriminación percibida,<sup>22</sup> y la falta de apoyo financiero y social,<sup>23</sup> lo que podría explicar, en parte, el mayor deterioro de su salud mental.<sup>24</sup> Asimismo, los doctorandos mexicanos presentaron una edad promedio más alta, lo que contrasta con estudios previos que asocian una mayor edad con un mayor riesgo de malestar psicológico.<sup>25</sup> Sin embargo, en este estudio, la mayor edad de los participantes mexicanos se asoció con mejores indicadores de bienestar, lo que sugiere que las diferencias culturales y académicas pueden desempeñar un papel más relevante en la salud mental de los investigadores que la edad por se.<sup>26</sup>

Para entender las diferencias observadas entre los doctorandos de España y México, también es importante destacar que existen diferencias significativas en la formación doctoral entre países: en España, los programas de doctorado están gestionados por las Escuelas de Doctorado de cada universidad y éstas las que supervisan

todos los programas de las múltiples áreas del conocimiento. Esta estructura se enmarca en el Espacio Europeo de Educación Superior (EEES) y la Asociación Europea de Universidades (AEU).<sup>27</sup> En contraste, los programas de doctorado en México están bajo la dirección de cada facultad, dada la mayor autonomía para adaptar y gestionar sus propios programas y doctorandos. En algunas universidades mexicanas, existe una Coordinación General de Posgrados, cuyo papel principal es promover y apoyar el desarrollo y la creación de programas de posgrado.<sup>28</sup> Además, las diferencias en la formación doctoral son notables. En España, la fase de formación suele ser breve y se enfoca en cursos y seminarios, mientras que en México, la formación es más estructurada y extensa e incluye clases obligatorias y una mayor carga teórica.<sup>29</sup> Por este motivo, el enfoque de formación podría influir en la construcción y mantenimiento de redes de apoyo social y profesional, así como en la percepción de calidad del apoyo recibido durante la etapa de formación;<sup>30</sup> por ejemplo, en la formación doctoral en España, al centrarse en cursos y seminarios independientes, puede haber menos cohesión y sentido de comunidad entre los participantes, lo que puede reducir el apoyo social y profesional percibido que se obtiene durante la formación.

En consecuencia, se sugiere que los sistemas de gestión y supervisión de los programas de doctorado, así como la atención a los doctorandos, podrían influir en el bienestar emocional de la comunidad académica, en especial de los jóvenes investigadores en formación y es importante considerar que una gestión más próxima y personalizada, junto con la promoción de actividades grupales con otros miembros del programa doctoral, podría reducir el aislamiento de los investigadores jóvenes y funcionar como un factor sistémico protector para la salud mental de los doctorandos y, en general, del personal académico e investigador.<sup>2,31</sup>

Los investigadores en formación representan aproximadamente 50% de los equipos de investigación en las universidades y son fundamentales para la producción científica, la innovación y la reputación institucional.<sup>30,32</sup> Por ello, las universidades deberían priorizar estrategias que favorezcan el bienestar de los doctorandos, tales como la implementación programas de formación en habilidades blandas o competencias transversales que incluyan gestión del estrés, prevención del desgaste laboral y liderazgo; promover estructuras de supervisión doctoral más cercanas y personalizadas, lo que fomenta el apoyo académico y emocional; diseñar políticas institucionales que reduzcan los riesgos psicosociales asociados a la carrera investigadora, especialmente en doctorandos internacionales.<sup>2,31,33,34</sup> Diferentes iniciativas europeas, como el *Researcher Mental Health Observatory* o el Consejo Europeo de Doctorandos (EURODOC), ya han señalado la importancia de implementar planes de apoyo estructurales que permitan la formación en competencias emocionales y la creación de entornos laborales más saludables para los investigadores en formación.<sup>35</sup>

Este estudio presenta fortalezas como el uso de los mismos instrumentos validados en ambos países y submuestras equivalentes reclutadas con idénticos procedimientos. Los datos ofrecen una primera visión de la salud mental en doctorandos mexicanos, lo que permite conocer la situación de investigadores en formación en Latinoamérica y compararlos con sus pares europeos, donde este tema es de creciente interés académico.<sup>3,6,34</sup> Sin embargo, esta investigación presenta algunas limitaciones. El diseño transversal impide establecer la dirección causal entre las variables. Además, el muestreo no probabilístico puede limitar la generalización de los resultados. Futuros estudios deberían considerar diseños longitudinales que analicen la evolución del bienestar y malestar emocional a lo largo del doctorado,<sup>2</sup> así como la influencia de variables contextuales como el tipo de supervisión o el clima institucional. Además, sería relevante expandir el análisis a otros países y universidades con diferentes características económicas y sociales para comprender mejor el impacto de los factores culturales y sistémicos en la salud mental de los investigadores. También se recomienda incluir variables adicionales, como la motivación académica y la relación con los directores de tesis, que pueden

desempeñar un papel clave en la experiencia doctoral.<sup>36</sup> Finalmente, conviene considerar posibles sesgos de representatividad de las submuestras mexicana y española en relación con sus respectivos universos muestrales, lo cual es particularmente relevante con las variables sociodemográficas en las que han aparecido diferencias significativas (edad y proporción de estudiantes internacionales) y que han sido postuladas como posibles factores de riesgo diferencial entre los estudiantes de doctorado de ambos países.

## CONCLUSIONES

Este estudio aporta una primera aproximación al estado de la salud mental en doctorandos mexicanos y permite contrastar estos datos con los de doctorandos europeos. Se confirma que los estudiantes mexicanos presentan mayores niveles de bienestar emocional, mientras que los españoles experimentan mayores niveles de malestar psicológico, lo que resalta el impacto del contexto académico y cultural en la salud mental de los investigadores en formación.

Dado el deterioro progresivo de la salud mental en la comunidad investigadora, las instituciones académicas deben fortalecer las redes de apoyo doctoral e incorporar estrategias de formación en competencias emocionales para prevenir el burnout y fomentar entornos de investigación más saludables y sostenibles.<sup>36</sup> La implementación de estas estrategias no solo beneficiaría el bienestar de los doctorandos, sino que también contribuiría a mejorar la calidad de la producción científica y la sostenibilidad del sistema de investigación a nivel global.

## AGRADECIMIENTOS

A todos los estudiantes de doctorado españoles (Universidad Autónoma de Barcelona) y mexicanos (Universidad Autónoma San Luis Potosí, Universidad Autónoma Ciudad de México) que dedicaron su tiempo a contestar la encuesta, así como a todos aquellos que ayudaron a difundirla: la Escuela de Doctorado de la Universidad Autónoma de Barcelona, la dirección de Postgrado de Psicología de la UASLP, la Secretaría de Investigación y Posgrado de la UASLP y el Dr. Francisco Herrera Tapia, Director de seguimiento y estudios avanzados del SIEA de la Universidad Autónoma Estado de México.

## DECLARACIÓN SOBRE CONFLICTOS DE INTERÉS

Los autores declaran no tener ningún conflicto de intereses. El manuscrito ha sido aprobado por todos los autores para su publicación.

## CONTRIBUCIÓN DE LOS AUTORES

**MJV** participó en la conceptualización y diseño del estudio, recolección de datos, análisis estadístico, revisión bibliográfica, redacción y aprobación final del manuscrito.

**LMB** recolectó datos, redacción y aprobación final del manuscrito.

**AS** diseñó el estudio, validación de instrumento, redacción y aprobación final del manuscrito.

**AMR** diseñó el estudio, validación de instrumento, redacción y aprobación final del manuscrito.

## REFERENCIAS

1. Jiménez-Villamizar M, Muro-Rodríguez A, Navarro JB, Carmona-Cervelló M, Cladellas R, Feliu-Soler A, et al. Predictive factors of the psychological impact of the COVID-19 pandemic on university students: A study in six Ibero-American countries. *SEAS*. 2023;29:153-62. <http://dx.doi.org/10.5093/anyes2023a19>
2. Muro-Rodríguez A, Jiménez-Villamizar MP. The third half: toward the creation of healthier research careers. the third half: toward the creation of healthier research careers. Barcelona: Autonomous University of Barcelona; 2023.
3. Levecque K, Anseel F, De Beuckelaer A, Van der Heyden J, Gisle L. Work organization and mental health problems in PhD students. *Res Policy*. 2017;46:868-79. <https://doi.org/10.1016/j.respol.2017.02.008>
4. Coriat A. PhD merit needs to be defined by more than just publications. *Nat Hum Behav*. 2019;3:1007. <https://doi.org/10.1038/s41562-019-0727-y>
5. Sánchez King JPA, Dahal S. The experiences of international doctoral students during the COVID-19 lockdown. *JISE*. 2022;16:45-72. <https://orcid.org/0000-0001-5571-1043>
6. Cena E, Burns' S, Wilson P. Sense of belonging and the intercultural and academic experiences among international students at a university in Northern Ireland. *J. Int. Stud*. 2021;11:812-31. <https://doi.org/10.32674/jis.v11i4.2541>
7. Auerbach RP, Mortier P, Bruffaerts R, et al. WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *J Abnorm Psychol*. 2018;127:623-38. <https://doi.org/10.1037/abn0000362>
8. Melchor A, Hernández-Zúñiga G, Sánchez, J. Universitarios mexicanos: lo mejor y lo peor de la pandemia de COVID-19 [Mexican university students: the best and worst of the covid-19 pandemic]. *RDU*. 2021;22:106-23. <http://doi.org/10.22201/cuaieed.16076079e.2021.22.3.12>
9. Pyhältö K, Peltonen J, Castelló M, McAlpine L. What sustains doctoral students' interest? Comparison of Finnish, UK and Spanish doctoral students' perceptions. *Compare*. 2020;50:726-41. <https://doi.org/10.1080/03057925.2019.1585229>
10. Woolston C. PhDs: The tortuous truth. *Nature*. 2019;575:403-7. <https://doi.org/10.1038/d41586-019-03459-7>
11. González-Betancor, S.M.; Dorta-González, P. Risk of interruption of doctoral studies and mental health in PhD students. *Mathematics*. 2020;8:1695. <https://doi.org/10.3390/math8101695>
12. Abreu LN, Oquendo MA, Galfavy H, Burke A, Grunebaum MF, Sher L, Sullivan GM, Sublette ME, Mann J, Lafer B. Are comorbid anxiety disorders a risk factor for suicide attempts in patients with mood disorders? A two-year prospective study. *Eur Psychiatry*. 2018;47:19-24. <https://doi.org/10.1016/j.eurpsy.2017.09.005>
13. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol*. 2000;55:68-78. <https://doi.org/10.1037//0003-066x.55.1.68>
14. Woolston, C. Graduate survey: A love-hurt relationship. *Nature*. 2017;550: 549-52. <https://doi.org/10.1038/nj7677-549a>
15. Vázquez C, Duque A, Hervás G. Satisfaction with life scale in a representative sample of Spanish adults: Validation and normative data. *Span J Psychol*. 2013;16:1-15. <https://doi.org/10.1017/sjp.2013.82>
16. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol*. 1988;54:1063-70. <https://doi.org/10.1037/0022-3514.54.6.1063>
17. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16:606-13. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>

18. García-Campayo J, Zamorano E, Ruiz MA, Pardo A, Pérez-Páramo M, López-Gómez V, Freire O, Rejas J. Cultural adaptation into Spanish of the generalized anxiety disorder-7 (GAD-7) scale as a screening tool. *Health Qual Life Outcomes*. 2010;20:8. <https://doi.org/10.1186/1477-7525-8-8>
19. Andrade E, Arce C, Torrado J, Garrido J, De Francisco C, Arce I. Factor structure and invariance of the POMS Mood State Questionnaire in Spanish. *Spanish J Psychol*. 2010;13:444-52. <https://doi.org/10.1017/s1138741600003991>
20. World Medical Association. Declaration of Helsinki. Helsinki; 2024.
21. Sakpal TV. Sample size estimation in clinical trial. *Perspect Clin Res*. 2010;1:67-9. <https://doi.org/10.4103/2229-3485.71856>
22. Carballeira M, González J, Marrero J. Diferencias transculturales en bienestar subjetivo: México y España [Cross-cultural differences in subjective well-being: Mexico and Spain]. *Anal Psicol*. 2015;31:199-206. <https://dx.doi.org/10.6018/analesps.31.1.166931>.
23. Van Rooij E, Fokkens-Bruinsma M, Jansen E. Factors that influence PhD candidates' success: The importance of PhD project characteristics. *Stud Contin Educ*. 2021;43:48-67. <https://doi.org/10.1080/0158037X.2019.1652158>
24. Maleku A, Kim YK, Kirsch J, et al. The hidden minority: Discrimination and mental health among international students in the US during the COVID-19 pandemic. *Health Soc Care Community*. 2022;30:e2419-32. <https://doi.org/10.1111/hsc.13683>
25. Neto F. Loneliness among African international students at Portuguese universities. *J Int Stud*. 2021;11:397-416. <https://doi.org/10.32674/jis.v11i2.1379>
26. Amador-Campos JA, Peró-Cebollero M, Feliu-Torruella M, Pérez-González A, Cañete-Massé C, Jarne-Esparcia AJ, Triadó-Ivern X, Guàrdia-Olmos J. Mentoring and research self-efficacy of doctoral students: A psychometric approach. *Educ Sci*. 2023;13:358. <https://doi.org/10.3390/educsci13040358>
27. Keloharju M, Knüpfer S, Müller D, Tåg J. PhD studies hurt mental health, but less than previously feared. *Res Policy*. 2024;53:105078.
28. Jiménez-Ramírez M. Los nuevos estudios de doctorado en España: avances y retos para su convergencia con Europa [New doctoral studies in Spain: progress and challenges for convergence with Europe]. *Rev Iberoam*. 2017;8:123-37. <https://doi.org/10.22201/iissue.20072872e.2017.21.217>
29. Patiño J. Análisis comparativo entre el doctorado profesional y de investigación en México [Comparative analysis between the professional and research doctoral degrees in Mexico]. *Rev Iberoam Educ. super*. 2019;10:25-41. <https://doi.org/10.22201/iissue.20072872e.2019.28.427>.
30. Barrera ML, Flores MM. Apoyo social percibido y salud mental positiva en hombres y mujeres universitarios [Perceived social support and positive mental health in college men and women]. *Voces Silec Rev Latinoam Educ*. 2020;11:67-83. <https://doi.org/10.18175/VyS11.2.2020.4>
31. Muro A, Bonilla I, Tejada-Gallardo C, Jiménez-Villamizar M, Cladellas R, Sanz A, Torregrossa M. The third half: a pilot study using evidence-based psychological strategies to promote well-being among doctoral students. *Int J Environ Res Public Health*. 2022;19:16905. <https://doi.org/10.3390/ijerph192416905>
32. Lisnyj K, Pearl DL, McWhirter JE, Papadopoulos A. Examining the influence of human and psychological capital variables on post-secondary students' academic stress. *Stud High Educ*. 2022;47:2508-22. <https://doi.org/10.1080/03075079.2022.2083101>
33. OECD. To what level have adults studied? In *Education at a glance 2022: OECD indicators*. Paris: OECD Publisher. <https://doi.org/10.1787/3197152b-en>
34. Researcher Mental Health Observatory. ReMO COST Action CA19117: Researcher Mental Health; 2021.

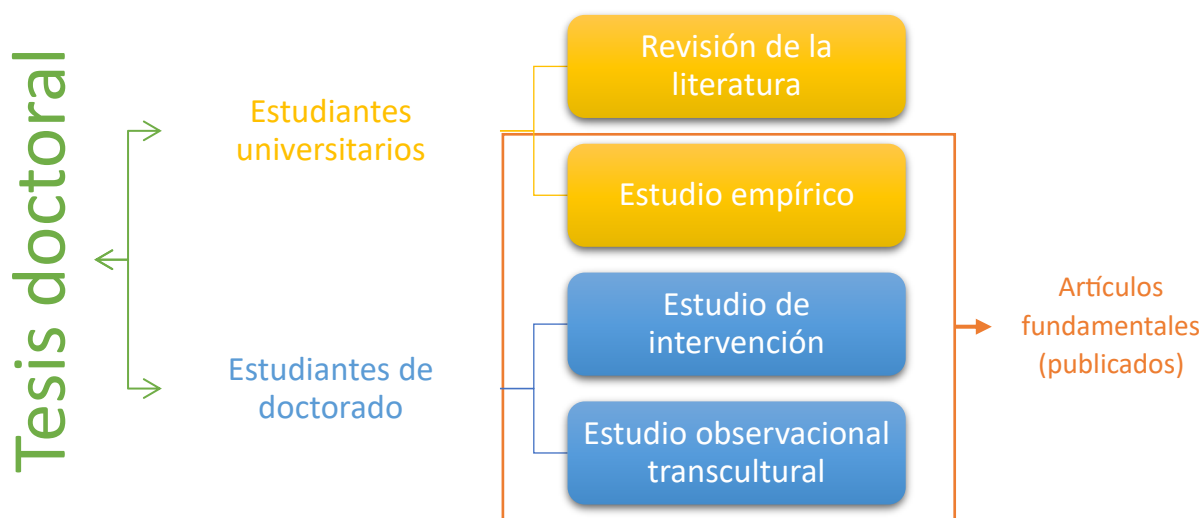
35. European Council of Doctoral Candidates and Junior Researchers Mental Health Working Group|Eurodoc; 2022.
36. Kafedjiska I, Heckmann L, Pires V, Saxena P, Lasser J. The Mental Health Crisis among Doctoral Researchers – Findings and Best Practices. Zeitschrift für Beratung und Studium. 2022;17:1-7.

## **Capítulo 4. Resultados y discusión**

## Resultados y discusión

Tal y como se indicó anteriormente, la figura 3 muestra que esta tesis estuvo conformada por cuatro estudios, representados en sus respectivos artículos. En el artículo 1 (Jiménez-Villamizar et al., 2025) se llevó a cabo una revisión sistemática de las evidencias sobre las prevalencias de ansiedad, depresión y distrés en los procesos de afrontamiento a corto y largo plazo en estudiantes universitarios durante la pandemia. En el artículo 2 (Jiménez-Villamizar et al., 2023) se realizó un estudio empírico en el que se analizaron los factores socioculturales y las diferencias individuales en el impacto psicológico de la pandemia en estudiantes universitarios de seis países iberoamericanos (Argentina, Colombia, España, Ecuador, México y Uruguay). En el artículo 3 (Jiménez et al., 2024) se implementó un programa de intervención en el que se probó la efectividad del programa "Third Half" con un enfoque multicomponente, que incluyó actividades gamificadas, soporte entre pares y técnicas de psicología positiva en estudiantes de doctorado. Por último, en el artículo 4 (Jiménez-Villamizar et al., 2025) se desarrolló un estudio observacional transcultural entre doctorandos mexicanos y españoles en relación con características sociodemográficas, indicadores de bienestar y malestar psicológico.

**Figura 3.** Estudios vinculados a la tesis doctoral



Fuente. Elaboración propia

Con el fin de facilitar la lectura de la información, se reportan a continuación los hallazgos principales de estos cuatro artículos en dos apartados, dando respuesta a los objetivos planteados en la tesis doctoral. En las siguientes líneas se exponen los resultados y la discusión general del impacto psicológico de la pandemia de COVID-19 en estudiantes universitarios (artículo 1 y artículo 2), la salud mental y bienestar en doctorandos (artículos 3 y 4). Estos estudios contribuyen a la literatura científica a través de la evidencia de los datos recolectados, dando respuesta a vacíos existentes en la evidencia científica.

## **1. Resultados**

### **1.1. Impacto psicológico de la pandemia de COVID-19 en estudiantes universitarios**

El estudio uno permitió identificar la prevalencia de ansiedad, depresión y el distrés en los procesos de afrontamiento a corto y largo plazo de los estudiantes universitarios durante la pandemia de COVID-19, a través de un metaanálisis donde se incluyeron 73 estudios con una muestra de 209761 estudiantes universitarios. Por otra parte, el estudio 2 estuvo conformado por una muestra, extraída de nuestra base de datos del proyecto PSY-COVID, conformada por 7601 estudiantes universitarios de seis países iberoamericanos (Argentina, Colombia, Ecuador, España, México y Uruguay) y buscó analizar factores socioculturales y diferencias individuales que explicaran el impacto psicológico de la pandemia en universitarios.

En el primer estudio de la revisión sistemática con metaanálisis se encontró que aproximadamente un tercio de los participantes experimentaron angustia psicológica durante la pandemia, en relación con los dos periodos evaluados. Las prevalencias de ansiedad, depresión y estrés fueron parecidas, mostrando un ligero aumento del 3% para la ansiedad en la fase crónica (periodo a largo plazo) frente a la fase de respuesta aguda de estrés-adaptación (periodo a largo). En el segundo estudio (Jiménez-Villamizar et al., 2023) también se escogió como población objetivo de estudio a estudiantes universitarios. Se encontró una prevalencia del 46.2 % de angustia psicológica, siendo mayor frente al 28.3 % de una muestra de 51.211 de población general perteneciente a los mismos seis países analizados. Asimismo, se identificaron diversas condiciones de riesgo universales (con pocas diferencias entre los países analizados) que se asociaron significativamente con síntomas de ansiedad, depresión y somatización: género femenino, puntuación alta en neuroticismo, y sentimientos de soledad.

Frente a esto, ambos estudios (1 y 2) resaltan el impacto negativo de la pandemia en la salud mental de los universitarios, con altas prevalencias de depresión, ansiedad y estrés. Afianzando la idea de cómo los fenómenos o crisis globales pueden afectar a poblaciones vulnerables. Los artículos concluyen el llamado a la necesidad de implementar intervenciones institucionales adaptadas no solo al contexto de las secuelas de la pandemia, sino a características específicas individuales de cada región y grupo demográfico, que fomente el bienestar acompañado de ambientes sostenibles y saludables a través de políticas institucionales.

## **1.2. Salud mental y bienestar en doctorandos**

En esta segunda fase de la tesis doctoral se llevó a cabo el estudio con doctorandos, dando respuesta a las necesidades del contexto y al “*gap*” de conocimiento relacionado con el tema, además de su importancia y fundamentación para el sistema educativo y el progreso de las sociedades científicas. El tercer artículo tuvo por propósito la implementación y evaluación de la efectividad de *The Third Half*, un programa psicoeducativo multicomponente que contó con una muestra de 26 participantes, 71 doctorandos que hicieron parte del grupo control para un total de 97 participantes. El cuarto artículo analizó y comparó características sociodemográficas, indicadores de bienestar y malestar emocional en estudiantes de doctorado mexicanos y españoles con una muestra total de 351 participantes.

*The Third Half* es un programa de intervención diseñado específicamente para el fomento del bienestar emocional en estudiantes universitarios basado en cinco pilares: psicología positiva en contexto educativos (Vázquez & Hervás, 2018), gamificación (Manzano-León et al., 2021), actividades al aire libre en espacios verdes (Muro et al., 2022b), actividad física (Devoto et al., 2023) y mentoría – apoyo entre pares (Kismihók et al., 2022). En el estudio realizado en el marco de esta tesis doctoral se encontró que los participantes mostraron disminución significativa en variables relacionadas con el malestar psicológico (afecto negativo -18 % en comparación con 3.7 % en el grupo control, ansiedad -33 % en comparación con 6.7 % en el grupo control- y depresión -29 % en comparación con 12.2 %). El cuarto estudio, centrado en una comparación entre doctorandos de diferentes países, evidencia mayores desafíos psicológicos para los doctorandos españoles al compararlos con mexicanos, observándose niveles mayores de malestar emocional (ansiedad-depresión) y niveles bajos de bienestar, el ser estudiante internacional y la edad fueron factores de riesgo para la salud mental.

Los resultados obtenidos en los estudios tres y cuatro evidencian juntamente una alta prevalencia de problemas de salud mental en doctorandos, destacando prevalencias elevadas en ansiedad, depresión y afecto negativo. Ambos estudios subrayan la importancia de estrategias de apoyo dirigida a investigadores de carrera temprana o doctorandos mediante políticas universitarias con adaptaciones culturales y académicas, si bien el estudio 4 revela diferencias ostensibles en la necesidad de implementación de programa según el sistema universitario del cual se trate, lo cual está condicionado probablemente por el contexto organizativo y sociocultural. En particular, se hace evidente la necesidad de implementar acciones de promoción de la salud en universidades españolas/europeas. Además, este cuarto estudio reveló que conviene abordar un importante sesgo de autoselección de participantes para un programa que, como el *Third Half*, se ofrece como formación de doctorado optativa, puesto que quedan paradójicamente autoexcluidos del mismo los estudiantes caracterizados por una mayor vulnerabilidad en su salud mental.

Se hace necesario asimismo señalar que para atender los objetivos de investigación de esta tesis se combinaron diferentes metodologías en los cuatro estudios que la conforman. A continuación se presenta la tabla 1 con el resumen de esta información.

**Tabla 1.** Tabla comparativa de enfoque y métodos de los estudios de la tesis doctoral

<b>Criterio</b>	<b>Artículo 1</b>	<b>Artículo 2</b>	<b>Artículo 3</b>	<b>Artículo 4</b>
<b>Diseño</b>	Metaanálisis	Estudio transversal	Estudio controlado no aleatorio	Estudio transversal
<b>Población de estudio</b>	Estudiantes universitarios (Global)	Estudiantes universitarios (Iberoamérica)	Doctorandos (España)	Doctorandos (México - España)
<b>Tamaño de la muestra</b>	209761 estudiantes	7601 estudiantes	97 doctorandos	351 doctorandos
<b>Instrumentos utilizados</b>	Diversos instrumentos validados en estudios previos	GAD-2, PHQ-2, SSQ-5, PTGI, UCLS, NEO-FFI, CD-RISC-2, PCS y cuestionario sociodemográfico	SWLS, PANAS, PHQ-9, GAD7, POMS y cuestionario sociodemográfico	SWLS, PANAS, PHQ-9, GAD7, POMS y cuestionario sociodemográfico
<b>Perspectiva temporal</b>	Corto y largo plazo	Pandemia COVID -19	Post-intervención (Breve plazo)	Post-pandemia

*Note.* GAD = Escala del Trastorno de Ansiedad Generalizada; SwF = Satisfacción con la vida; PA = Afecto positivo; NA = Afecto negativo; PHQ = Salud del paciente; POMS = Cuestionario Perfil de estados de ánimo.

*Fuente:* Elaboración propia

## 2. Discusión

### 2.1. Comparación con estudios previos

Como se ha venido explicando, los primeros dos estudios de la tesis doctoral fueron realizados en estudiantes universitarios. El primer estudio de esta tesis doctoral se basó en un metaanálisis donde se analizaron datos a corto plazo (periodo uno) y largo plazo (periodo dos). Para el periodo uno se encontró que los estudiantes universitarios tenían un 34% ansiedad, 38% depresión y 54% estrés. Para el periodo dos a largo plazo se halló síntomas clínicamente del 37% para ansiedad, del 31% para depresión y 41% para estrés, frente a esto podemos hablar de que no hay un empeoramiento por efecto acumulativo, por el contrario, cuando comparamos con otros estudios se reportan empeoramientos de la salud mental con niveles severos de depresión, ansiedad y estrés, sugiriendo un deterioro general en el bienestar psicológico (Abelson et al., 2022; Abrams, 2022; Buizza et al., 2022; Emmerton et al., 2024; Estupiñá et al., 2024; Fruehwirth et al., 2021) algunos estudios sugieren aumentos del 50 % del malestar psicológico (Sutton, 2023), si bien es importante resaltar que estos estudios no fueron de corte longitudinal, lo cual limita el alcance de sus conclusiones. Al comparar con estudios de corte de longitudinal, se encontraron algunos reportes similares a los de nuestra revisión sistemática, donde no se evidencian diferencias significativas entre los dos períodos analizados (fase de respuesta aguda y fase de adaptación crónica); contrariamente, se observa un ligero decremento en las puntuaciones de ansiedad y depresión (Guzmán-Cortés et al., 2024; Weber et al., 2022). Otro estudio reportó que los indicadores de malestar emocional tendían al incremento, pero los cambios no fueron clínicamente significativos (Stamatis et al., 2022). Esto sugiere que los estudiantes pudieron haber desarrollado mecanismos de adaptación en el tiempo, debido al mayor conocimiento sobre la etiología, vías de transmisión del virus SARS-CoV-2 y avances en el tratamiento de la enfermedad, así como la evolución favorable en los indicadores epidemiológicos de la COVID-19 y a la implementación de los esquemas de vacunación masiva frente al virus (Instituto Nacional de Salud, 2022). En el segundo estudio (Jiménez-Villamizar et al., 2023) se halló una prevalencia del 46.15% de angustia psicológica entre los estudiantes universitarios de seis países iberoamericanos, mayor que la población general (28.27 %) perteneciente a los mismos seis países datos que son consistentes con estudios previos sobre mayor afectación en esta población (ACHA, 2019; Al Mamun et al., 2021; Muñoz et al., 2020). También se identificaron factores de vulnerabilidad relacionados con la angustia psicológica (definida como presencia de sintomatología

de ansiedad y/o depresión), como el género femenino, una puntuación alta en neuroticismo y sentimientos de soledad. Diversos estudios son concordantes en la identificación de estos factores de vulnerabilidad personal, ya que se relacionan con mayor activación en el sistema nervioso simpático, pensamiento negativos e inestabilidad emocional, trayendo consigo un mayor esfuerzo para adaptarse a nuevas situaciones (Nochaiwong et al., 2021), ante las mismas presiones y roles sociales frente a tareas diarias del trabajo y el hogar (Otten et al., 2021). Asimismo, se han identificado factores protectores como la resiliencia y el género masculino, los cuales permitiéndose han relacionado con una gestión y activación más efectiva de estrategias de adaptación al entorno (Pidgeon et al., 2014). En nuestro estudio se hizo una comparación entre países, no observándose diferencias significativas del impacto cultural en la salud mental de los universitarios. Esto puede ser explicado desde la similitud de contextos educativos en países iberoamericanos como la apertura parcial de las universidades (Marques et al., 2021; Pérez-Anaya et al., 2021), además de la similitud ambiental en recurso y herramientas entre los países participantes (CRUE, 2020; Kleiman et al., 2020). Dado que son mayores las similitudes que las diferencias encontradas entre países por lo que se refiera a prevalencia de problemas y de factores moderadores, se infiere que son factores comunes al conjunto de estudiantes universitarios de los distintos países (población joven y feminizada) los más relevantes con relación a los problemas de malestar emocional identificados durante la pandemia.

El tercer y cuarto estudio que hacen parte de este compilado para la tesis doctoral, se llevaron a cabo con estudiantes de doctorado. En el tercer estudio basado en la implementación del programa *The Third Half*, se encontró que antes de la intervención los doctorandos mostraban altos niveles de estrés, ansiedad y agotamiento, con niveles bajos de bienestar emocional. Existe poca evidencia previa de programas de intervención diseñados específicamente y aplicados a investigadores en etapa temprana o doctorandos para la disminución de malestar psicológico y el aumento del bienestar (Muro et al., 2022; Treve, 2021). Al compararse con la evaluación cualitativa de un programa virtual implementado con estudiantes de doctorado en universidades de Inglaterra (Casey et al., 2024), se encontró una mejora en temas relacionados con bienestar psicológico y disminución en sentimientos negativos a través de mayor apoyo social y manejo de emociones. Aunque en nuestro estudio las variables relacionadas con bienestar no mostraron diferencias significativas, sí que se observaron en los participantes del tercer tiempo aumentos en estas.

Finalmente el cuarto estudio, centrado en una investigación transcultural, concluyó que existen niveles más altos de malestar emocional y niveles más bajos de bienestar en doctorandos españoles que en mexicanos. Además, se resaltan como factores de riesgo la edad y el ser estudiante internacional. Diversos estudios respaldan que el ser estudiante internacional se relaciona con

problemas de salud mental debido al proceso de migración, adaptación institucional y cultural al que se ven enfrentados (Iorga et al., 2020), acompañado muchas veces de pocas redes de apoyo social y económico (Van Rooij et al., 2019), así como de experiencias discriminatorias (Maleku et al., 2021; Xiong et al., 2022). En este cuarto este otro hallazgo reseñable es que a menor edad mayor es el riesgo de padecer malestar psicológico. Este resultado difiere de otros estudios, donde se resalta que los doctorandos de mayor edad presentarían una disminución del riesgo de malestar emocional (Amador-Campos et al., 2023; Neto, 2021; Rose et al., 2003).

## **2.2. Diferenciación del impacto nacional (Cataluña) vs. internacional (OMS - ONU)**

El impacto en la salud mental en estudiantes universitarios y doctorandos varía según el contexto que se analice. Es importante resaltar que diferencias políticas, acceso a recursos y un enfoque cultural determinan cómo se abordarán estos problemas.

Los estudios en Cataluña revelan cifras preocupantes por encima del 40% en sintomatología relacionada con depresión y ansiedad, enfrentando desafíos específicos en salud mental. Cataluña cuenta con universidades ubicadas en posiciones destacadas en rankings como el de Shanghai (*Academic Ranking of World Universities – ARWU*), lo cual es indicador de que sus investigadores de etapa temprana se hallan en un entorno alta y crecientemente competitivo, relacionado con exigencia académicas, producción científica e investigación. Esto puede explicar que los niveles de malestar psicológico hayan aumentado a la par en los últimos años (Asociación catalana de universidades públicas, 2012). Por otra parte, la OMS aborda la salud como una prioridad global identificando además factores claves en la crisis de salud mental en universitarios reportando a este grupo como vulnerable y mayormente afectado post pandemia (Zapata-Ospino, et al., 2021), por su parte la ONU desde su visión más amplia integra la salud mental en los Objetivos de Desarrollo Sostenible (ODS), señalando que la falta de atención a la salud mental afecta el bienestar educativo y profesional de los jóvenes (Votruba et al., 2016).

Todo lo anterior permite poner en valor los resultados obtenidos en esta tesis doctoral, en tanto ofrecen una respuesta pertinente tanto a las necesidades locales y regionales como a los desafíos internacionales en torno a la crisis de salud mental en la academia. Este trabajo ha contribuido a posicionar al equipo de investigación entre los pioneros en el análisis e intervención en salud mental del estudiantado universitario, consolidando su presencia en el panorama regional e internacional como referente en este campo emergente (Jiménez-Villamizar et al., 2023; Jiménez-Villamizar et al., 2024; Jiménez-Villamizar et al., 2025). Así mismo, los resultados son en líneas generales altamente coincidentes con los estudios como el de la salud mental en el sistema universitario de Catalunya

(Amador-Campo et al., 2023) y en España (Estupiñá et al., 2024). Los resultados de esta tesis enfatizan la necesidad de implementar programas de intervención y apoyo psicológico como el evaluado en esta tesis (*The Third Half*) donde se proporcionan evidencia concreta de que la formación psicoeducativa multicomponente podría ser eficaz para gestionar el bienestar de los investigadores de etapa temprana y estudiantes de doctorado, así como para reducir su malestar.

### 3. Fortalezas y limitaciones

Para la realización de presente tesis doctoral se ha desplegado una combinación heterogénea de métodos de investigación para cumplir sus objetivos; no obstante, es importante resaltar otras fortalezas, además de las limitaciones de los diversos estudios que la componen.

En relación al primer estudio (*La salud mental en los procesos de adaptación a corto y largo plazo de los estudiantes universitarios durante la pandemia de COVID-19*), se destacan como principales fortalezas: 1) una amplia muestra que incluye 73 artículos con 209.761 participantes, lo cual permitió resultados representativos y robusto; 2) la comparación a corto y largo plazo de la pandemia en la salud mental de los universitarios permitió un análisis temporal; 3) una metodología rigurosa a través de un metaanálisis y la evaluación de riesgo de sesgo utilizando el *Critical Appraisal Checklist for Studies Reporting Prevalence Data* del Instituto Joanna Briggs (JBI). Como debilidades encontramos 1) heterogeneidad alta debido a los diferentes instrumentos utilizados, las metodologías y los contextos de los estudios incluidos.

En el segundo estudio (*Predictive factors of the psychological impact of the COVID-19 pandemic on university students*), se resaltan como fortalezas: 1) incluir datos de seis países, lo que permitió un análisis de diversidad cultural; 2) un enfoque multifactorial, que se atendió a través del estudio de diferencias individuales y culturales para el análisis del impacto del COVID-19; 3) el uso de instrumentos validados, lo que permitió un análisis de datos confiables. Dentro de las limitaciones estuvieron: 1) la mayoría de los participantes son mujeres, lo que limita la representatividad y también está relacionado con no abarcar la totalidad de los países de la región; 2) el diseño transversal no permite evaluar cambios a lo largo del tiempo.

En el tercer estudio (*The Third Half: a positive psychoeducational program to promote well-being and mental health among early career researchers*) las fortalezas más destacadas son: 1) un programa de intervención práctica que demostró efectividad; 2) al incluirse un grupo control se

mejoró el diseño del programa piloto previo aumentando la validez del estudio; 3) podría ser una perspectiva aplicable y replicable para apoyar el tema de bienestar en doctorandos. Dentro de las limitaciones están las siguientes: 1) un tamaño muestral pequeño, lo que limita la generalización de los hallazgos; 2) la muestra homogénea de una sola universidad y la evaluación a corto plazo, lo que no permitió analizar la efectividad a largo plazo.

El cuarto estudio (*Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural*) muestra como principales fortalezas las siguientes: 1) comparación transcultural entre estudiantes latinos y europeos; 2) muestra amplia con detalle en el análisis de variables sociodemográficas; 3) uso de instrumentos con amplia confiabilidad y validados. Una de las limitaciones de este estudio fue 1) el diseño transversal que no permitió responder a causalidades o cambios a lo largo del tiempo.

Un resumen del conjunto de las fortalezas y limitaciones de los cuatro estudios aparece en la tabla 2, Esencialmente, se destacan como fortalezas perspectivas amplias y diversas, el uso de herramientas validadas y una aplicación práctica, y como limitaciones esenciales la falta de longitudinalidad y de representatividad muestral en algunos de los estudios.

**Tabla 2.** Fortalezas y limitaciones combinadas de los artículos incluidos en la tesis doctoral

<b>Fortalezas combinadas</b>	<b>Perspectiva amplia y diversa</b>	Los estudios ofrecen una visión global (artículo 1), regional (artículo 2), aplicada (artículo 3) y cultural (artículo 4) de la salud mental.
	<b>Uso de instrumentos validados</b>	Diversidad de enfoques (metaanálisis, estudios transversales e intervención práctica) proporciona una comprensión holística del problema.
	<b>Aplicabilidad práctica</b>	Los cuatro artículos utilizan herramientas conocidas y validadas, con buen comportamiento psicométrico, lo que mejora la confiabilidad de los resultados.
<b>Limitaciones combinadas</b>	<b>Falta de longitudinalidad</b>	El estudio 3 incluye una intervención práctica que puede ser adaptada y replicada a otros contextos.
	<b>Representatividad u homogeneidad</b>	A excepción del artículo 1, ninguno de los estudios ofrece una evaluación a largo plazo de las variables de análisis.
		Algunos de los estudios tienen limitación de muestras pequeñas, homogéneas o sesgos demográficos, lo que limita la generalización

Fuente. Elaboración propia

#### 4. Referencias

- Abelson, S., Lipson, S.K., Eisenberg, D. (2022). *Mental Health in College Populations: A Multidisciplinary Review of What Works, Evidence Gaps, and Paths Forward*. In: Perna, L.W. (eds) Higher Education: Handbook of Theory and Research. Higher Education: Handbook of Theory and Research, vol 37. Springer, Cham. [https://doi.org/10.1007/978-3-030-76660-3\\_6](https://doi.org/10.1007/978-3-030-76660-3_6)
- Abrams, Z. (2022). Student mental health is in crisis. Campuses are rethinking their approach: Amid massive increases in demand for care, psychologists are helping colleges and universities embrace a broader culture of well-being and better equipping faculty to support students in need. *Monitor on Psychology*, 53(7), 60. <https://www.apa.org/monitor/2022/10/student-mental-health-crisis>
- Al Mamun, F., Hosen, I., Misti, J. M., Kaggwa, M. M., & Mamun, M. A. (2021). Mental disorders of Bangladeshi students during the COVID-19 pandemic: A systematic review. *Psychology Research and Behavior Management*, 14, 645–654. <https://doi.org/10.2147/PRBM.S315961>
- Amador-Campos, J.A.; Peró-Cebollero, M.; Feliu-Torruella, M.; Pérez-González, A.; Cañete-Massé, C.; Jarne-Esparcia, A.J.; Triadó-Ivern, X.; Guàrdia-Olmos, J. (2023). Mentoring and Research Self-Efficacy of Doctoral Students: A Psychometric Approach. *Education Sciences*, 13, 358. <https://doi.org/10.3390/educsci13040358>
- American College Health Association. (2019). *American College Health Association-National College Health Assessment II: Reference group executive summary spring 2019*. Silver Spring, MD: American College Health Association. [https://www.acha.org/documents/ncha/NCHAII\\_SPRING\\_2019\\_US\\_REFERENCE\\_GROUP\\_EXECUTIVE\\_SUMMARY.pdf](https://www.acha.org/documents/ncha/NCHAII_SPRING_2019_US_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf)
- Asociación catalana de universidades públicas. (2012). Impactos de las universidades públicas catalanas en la sociedad. [https://www.acup.cat/sites/default/files/impactos-de-las-universidades-publicas-catalanas-en-la-sociedad\\_0.pdf](https://www.acup.cat/sites/default/files/impactos-de-las-universidades-publicas-catalanas-en-la-sociedad_0.pdf)
- Buizza, C., Bazzoli, L., & Ghilardi, A. (2022). Changes in college students' mental health and lifestyle during the COVID-19 pandemic: A systematic review of longitudinal studies. *Adolescent Research Review*, 7(4), 537–550. <https://doi.org/10.1007/s40894-022-00192-7>

- Casey, C., Trenoweth, S., Harvey, O., Helstrip, J., Knight, F., Taylor, J., & Polkinghorne, M. (2024). Qualitative Pilot Interventions for the Enhancement of Mental Health Support in Doctoral Students. *Psych*, 6(1), 426-437. <https://doi.org/10.3390/psych6010025>
- CRUE. (2020). The University in the face of the pandemic. <https://www.crue.org/wp-content/uploads/2020/12/La-Universidad-frente-a-la-Pandemia.pdf>
- Devoto, M., Borrueco, M., Jordana, A., Torregrossa, M., & Ramis, Y. (2023). Physical activity, well-being and mental health prevention. In A. Muro & M. Jiménez-Villamizar (Eds.), *The third half: toward the creation of healthier research careers* (pp. 31-37). Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10005929>
- Emmerton, R., Camilleri, C., & Sammut, S. (2024). Continued deterioration in university student mental health: Inevitable decline or skirting around the deeper problems? *Journal of Affective Disorders Reports*, 15, 100691. <https://doi.org/https://doi.org/10.1016/j.jadr.2023.100691>
- Estupiñá, F. J., Santalla, Álvaro, Prieto-Vila, M., Sanz, A., & Larroy, C. (2024). Mental Health in Doctoral Students: Individual, Academic, and Organizational Predictors. *Psicothema*, 36(2), 123–132. <https://doi.org/10.7334/psicothema2023.156>
- Fruehwirth, J. C., Biswas, S., & Perreira, K. M. (2021). The Covid-19 pandemic and mental health of first-year college students: Examining the effect of Covid-19 stressors using longitudinal data. *PLOS ONE*, 16(3), e0247999. <https://doi.org/10.1371/journal.pone.0247999>
- Guzmán-Cortés, J., Bolaños-Ceballos, F., Sánchez-Betancourt, J., Luna-Padilla, J., & Curiel Latorre, B. (2024). Sintomatología ansiosa y depresiva en estudiantes de psicología ante la contingencia COVID-19: Estudio Longitudinal. *Psicumex*, 14(1), 1–22. <https://doi.org/10.36793/psicumex.v14i1.613>
- Instituto Nacional de Salud. (2022). ¿Por qué la pandemia durará hasta 2022?. <https://www.ins.gov.co/Noticias/Paginas/Por-que-la-pandemia-durara-hasta-2022.aspx>
- Iorga, M., Soponaru, C., Muraru, I. D., Socolov, S., & Petrariu, F. D. (2020). Factors Associated with Acculturative Stress among International Medical Students. *BioMed Research International*, 2564725. <https://doi.org/10.1155/2020/2564725>
- Jiménez-Villamizar, M. P., Martínez-Blanquet, L. J., Sanz, A., & Muro-Rodríguez, A. (2025). Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural. *Duazary*, 22, e6404. <https://doi.org/10.21676/2389783X.6404>
- Jiménez-Villamizar, M. P., Tejada-Gallardo, C., Becerra-Rojas, A., Devoto-Araya, M., Fernández-García, M., López-García, R., Bonilla, I., Tadić Vujčić, M., Mol, S. T., Sanz-Ruiz, A., & Muro-Rodríguez, A. (2024). The Third Half: A positive psychoeducational program to

- promote well-being and mental health among early career researchers. *Psychology, Society & Education*, 16(3). <https://doi.org/10.21071/pse.v16i3.17180>
- Jiménez-Villamizar, M., Comendador Vazquez, L., Sanabria-Mazo, J., Mateo-Canedo, C., Losilla, J., Muro, A., & Sanz, A. (2025). Mental health in the short- and long-term adaptation processes of university students during the COVID-19 pandemic: A systematic review and meta-analysis [Preprint]. *MedRxiv*. <https://doi.org/10.1101/2025.03.14.25323978>
- Jiménez-Villamizar, M., Muro, A., Navarro, J. B., Carmona, M., Cladellas, R., Feliu-Soler, A., et al. (2023). Predictive factors of the psychological impact of the COVID-19 pandemic on university students in six Ibero-American countries. *Ansiedad y Estrés*, 29(3), 153-162. <https://doi.org/10.5093/anyes2023a19>
- Kismihók, G., Cahill, B., Gauttier, S., Metcalfe, J., Mol, S. T., McCashin, D., Lasser, J., Günes, M., Schroijsen, M., Grund, M., Levecque, K., Guthrie, S., Wac, K., Dahlgaard, J. O., Nadim Adi, M., & Kling, C. (2021). *Researcher mental health and well-being manifesto*. Zenodo. <https://doi.org/10.5281/zenodo.5788557>
- Kleiman, E., Yeager, A., Grove, J., Kellerman, J., & Kim, J. (2020). Real-time Mental Health Impact of the COVID-19 Pandemic on College Students: Ecological Momentary Assessment Study. *JMIR Ment Health*, 7(12), e24815. <http://doi.org/10.2196/24815>
- Maleku, A., Kim, Y. K., Kirsch, J., Um, M. Y., Haran, H., Yu, M., & Moon, S. S. (2021). The hidden minority: Discrimination and mental health among international students in the US during the COVID-19 pandemic. *Health & Social Care in the Community*. <https://doi.org/10.1111/hsc.13683>
- Manzano-León, A., Camacho-Lazarraga, P., Guerrero, M., Guerrero-Puerta, L., Aguilar-Parra, J. M., Trigueros, R., & Alias, A. (2021). Between level up and game over: A systematic literature review of gamification in education. *Sustainability*, 13(4), 2247. <https://doi.org/10.3390/SU13042247>
- Marques, G., Drissi, N., de la Torre Díez, I., Sainz de Abajo, B., & Ouhbi, S. (2021). Impact of COVID-19 on the psychological health of university students in Spain and their attitudes toward mobile mental health solutions. *International Journal of Medical Informatics*, 147, 104369. <https://doi.org/10.1016/j.ijmedinf.2020.104369>
- Muñoz-Fernández, S. I., Molina-Valdespino, D., Ochoa-Palacios, R., Sánchez-Guerrero, O., & Esquivel-Acevedo, J. A. (2020). Estrés, respuestas emocionales, factores de riesgo, psicopatología y manejo del personal de salud durante la pandemia por COVID-19. *Acta Pediátrica de México*, 41(4S1), S127–S136. <https://ojs.actapediatrica.org.mx/index.php/APM/article/view/2104>

- Muro, A., Bonilla, I., Tejada-Gallardo, C., Jiménez-Villamizar, M. P., Cladellas, R., Sanz, A., & Torregrossa, M. (2022). The third half: A pilot study using evidence-based psychological strategies to promote well-being among doctoral students. *International Journal of Environmental Research and Public Health*, *19*(24), Article 16905. <https://doi.org/10.3390/ijerph192416905>
- Muro, A., Feliu-Soler, A., Canals, J., Parrado, E., & Sanz, A. (2022b). Psychological benefits of Forest Bathing during the COVID-19 pandemic: A pilot study in a Mediterranean forest close to urban areas. *Journal of Forest Research*, *27*(1), 71-75. <https://doi.org/10.1080/13416979.2021.1996516>
- Naumann, S., Matyjek, M., Bögl, K., et al. (2022). Doctoral researchers' mental health and PhD training satisfaction during the German COVID-19 lockdown: Results from an international research sample. *Scientific Reports*, *12*, 22176. <https://doi.org/10.1038/s41598-022-26601-4>
- Neto F. (2021). Loneliness Among African International Students at Portuguese Universities. *Journal of International Students*, *11*(2), 397-416. <https://doi.org/10.32674/jis.v11i2.1379>
- Nochaiwong, S., Ruengorn, C., Thavorn, K., Hutton, B., Awiphan, R., Phosuya, C., Ruanta, Y., Wongpakaran, N., & Wongpakaran, T. (2021). Global prevalence of mental health issues among the general population during the coronavirus disease-2019 pandemic: a systematic review and meta-analysis. *Scientific Reports*, *11*(1), 10173. <https://doi.org/10.1038/s41598-021-89700-8>
- Otten, D., Tibubos, A., Schomerus, G., Brähler, E., Binder, H., Kruse, J., Ladwig, K., Wild, P., Grabe, H., & Beutel, M. (2021). Similarities and Differences of Mental Health in Women and Men: A Systematic Review of Findings in Three Large German Cohorts. *Frontiers in Public Health*, *9*, 553071. <https://doi.org/10.3389/fpubh.2021.553071>
- Pérez-Anaya, O., Wilches-Visbal, H., & Jiménez-Villamizar, M. (2021). Biophysical aspects of SARS-CoV-2 transmission and measures to counteract COVID-19: a comprehensive review. *Duazary*, *18*(3), 268- 282. <https://doi.org/10.21676/2389783X.4226>
- Pidgeon, M., Rowe1, N., Stapleton, P., Magyar, H., Barbara, C., & Lo, Y. (2014). Examining Characteristics of Resilience among University Students: An International Study. *Open Journal of Social Sciences*, *2*, 14-22. <https://doi.org/10.4236/jss.2014.211003>
- Rose, G.L. (2003). Enhancement of mentor selection using the ideal mentor scale. *Research in Higher Education*, *44*, 473–494. <https://doi.org/10.1023/A:1024289000849>
- Stamatis, C. A., Broos, H. C., Hudiburgh, S. E., Dale, S. K., & Timpano, K. R. (2022). A longitudinal investigation of COVID-19 pandemic experiences and mental health among

- university students. *British Journal of Clinical Psychology*, 61(2), 385–404.  
<https://doi.org/10.1111/bjc.12351>
- Sutton, H. (2023). Student mental health worsening, students not seeking care. *Dean and Provost*, 25(1), 8. <https://doi.org/10.1002/dap.31248>
- Treve, M. (2021). Study of humanistic education: Concerns, implications, and applications. *Turkish Journal of Computer and Mathematics Education*, 12(11), 6303-6310.  
<https://doi.org/10.17762/turcomat.v12i11.7005>
- Van Rooij, E., Fokkens-Bruinsma, M., & Jansen, E. (2019). Factors that influence PhD candidates' success: the importance of PhD project characteristics. *Studies in Continuing Education*, 43(1), 48–67. <https://doi.org/10.1080/0158037X.2019.1652158>
- Vázquez, C., & Hervás, G. (2018). *Psicología positiva aplicada* (2nd ed.). Desclée de Brouwer.
- Votruba, N., Thornicroft, G., & el grupo directivo de FundaMentalSDG. (2016). Sustainable development goals and mental health: learnings from the contribution of the FundaMentalSDG global initiative. *Global Mental Health*, 3, e26.  
<https://doi.org/10.1017/gmh.2016.20>
- Weber, M., Schulze, L., Bolzenkötter, T., Niemeyer, H., & Renneberg, B. (2022). Mental health and loneliness in university students during the COVID-19 pandemic in Germany: A longitudinal study. *Frontiers in Psychiatry*, 13, 848645. <https://doi.org/10.3389/fpsy.2022.848645>
- Xiong, Y., Rose Parasath, P., Zhang, Q., & Jeon, L. (2022). International students' perceived discrimination and psychological distress during the COVID-19 pandemic. *Journal of American College Health*, 72(3), 869–880. <https://doi.org/10.1080/07448481.2022.2059376>
- Zapata-Ospina, J. P., Patiño-Lugo, D. F., Vélez, C. M., Campos-Ortiz, S., Madrid-Martínez, P., Pemberthy-Quintero, S., Pérez-Gutiérrez, A. M., Ramírez-Pérez, P. A., & Vélez-Marín, V. M. (2021). Intervenciones para la salud mental de estudiantes universitarios durante la pandemia por COVID-19: una síntesis crítica de la literatura. *Revista Colombiana de Psiquiatría*, 50(3), 176–189. <https://doi.org/10.1016/j.rcp.2021.04.007>

## **Capítulo 5. Conclusiones**

## Conclusiones

### 1. Conclusiones generales del estudio

La revisión de los cuatro artículos que conforman la presente tesis doctoral permitió revelar patrones comunes y diferenciadores claves en la salud mental de estudiantes universitarios y doctorandos, así como estrategias de intervención para mejorar su bienestar. En términos generales, se coincide que estos dos grupos enfrentan deterioro en su salud mental y bienestar, pero difieren en los factores de riesgo identificados, el enfoque y efectividad de los programas. Con el punto de partida de una revisión sistemática hasta un estudio observacional transcultural y los datos encontrados a partir de la realización de esta tesis doctoral, dentro de las conclusiones más importantes de esta tesis está:

#### **Impacto de la salud mental en universitarios y doctorandos**

Los datos de los artículos destacaron la prevalencia de problemas de salud mental que han aumentado en los últimos años, especialmente después de la pandemia. Los estudiantes universitarios están doblemente más afectados que la población general. Cifras que están por encima del 40% en ansiedad, depresión o estrés, la falta de búsqueda de ayuda, el estigma y la presión académica son claves para explicar esto. Por otro lado los artículos sobre doctorandos revelan que esta población enfrenta desafíos específicos, relacionados con la incertidumbre laboral y la falta de apoyo social, además cómo el contexto cultural y al estructura académica puede influir en la intensidad de malestar psicológico. Esto sugiere que, aunque los problemas de salud mental están presentes en ambas poblaciones, las causas y manifestaciones varían dependiendo del nivel educativo y del contexto sociocultural.

#### **Factores de riesgo y protección**

Si bien todos los artículos identificaron el contexto como un factor clave, el segundo artículo amplía este análisis al señalar que variables individuales como el género, la personalidad (neuroticismo) y la soledad fueron los principales factores predictores de problemas de salud mental durante la pandemia. Además, se encontró que la resiliencia y el crecimiento postraumático pueden actuar como factores protectores, reduciendo el impacto negativo de estos estresores. Asimismo, a partir de estos estudios se observó que existe una homogeneidad cultural en los países evaluados y esto se debió posiblemente a medidas similares implementadas durante la pandemia en el contexto académico universitario.

En el caso de los doctorandos, los estudios resaltan que la carga de trabajo extrema y la movilidad internacional pueden intensificar el aislamiento, aumentando la ansiedad y la depresión. A diferencia de los universitarios, cuya angustia suele estar relacionada con la adaptación a la vida académica y la incertidumbre sobre el futuro, los doctorandos deben lidiar con una presión constante por la producción científica y la competitividad en el ámbito académico.

### **Evaluación de Estrategias de Intervención**

Los programas de intervención integradores como “*The Third Half*” en doctorandos, basado en evidencia científica usando actividades de gamificación en espacios al aire libre, enfocados en la psicología positiva, el apoyo social y la mentoría entre pares mostraron resultados importantes en la disminución de indicadores de malestar psicológico. Estos resultados permiten identificar la necesidad de mayores esfuerzos institucionales para implementar programas sostenibles que promuevan habilidades que permitan el desarrollo de “*soft skills*” para el manejo del bienestar en entornos académicos.

### **Necesidad de Adaptación de las Intervenciones**

Los cuatro artículos enfatizan la importancia de adaptar las estrategias de intervención a cada grupo poblacional. Mientras que los universitarios pueden beneficiarse de campañas de concienciación y apoyo institucional, los doctorandos requieren programas más específicos que atiendan la presión académica y el aislamiento.

Además, los estudios destacan la importancia de los factores culturales y contextuales en el bienestar de los estudiantes. La comparación entre doctorandos en España y México sugiere que las universidades deben ajustar sus políticas según las necesidades de cada población, promoviendo una cultura de bienestar sostenible y accesible.

Estudiar primero a los universitarios permitió establecer una base sólida y representativa sobre los problemas de salud mental en la educación superior. Luego, investigar a los doctorandos amplió esta comprensión, profundizando en los retos avanzados y acumulativos, permitiendo diseñar estrategias de apoyo más efectivas y específicas para cada etapa educativa. Además permitieron demostrar la complejidad del impacto de la pandemia y otros factores académicos en la salud mental de los estudiantes, mostrando tasas de malestar psicológico alarmantes.

Los principales hallazgos indican que la pandemia de COVID-19 reveló las limitaciones de las instituciones de educación superior en el abordaje de la salud mental, por lo cual se propone

lineamientos para la construcción de un sistema que priorice la salud mental como elemento esencial no solo en el desarrollo personal, sino profesional con el diseño de políticas institucionales que incluya:

- Creación de centros de bienestar y espacios dedicados a la promoción del bienestar físico, social y psicológico.
- Sistemas de evaluación continua a través de entrevistas, observaciones y encuestas identificando la efectividad de las intervenciones.
- Promoción de comités estudiantiles donde expresen necesidades y propongan iniciativas adaptadas al contexto.
- Desarrollo curricular que incorpore módulos de capacitación enfocados en la inclusión de la salud mental, el fortalecimiento de habilidades de afrontamiento, entre otros temas relevantes.

A modo de resumen se presenta la siguiente tabla 3 con los hallazgos claves de la tesis doctoral.

**Tabla 3.** Hallazgos claves de la tesis doctoral

<b>Artículo</b>	<b>Hallazgos claves</b>
Artículo 1: La salud mental en los procesos de adaptación de corto y largo plazo de los estudiantes universitarios durante la pandemia de COVID-19	Aproximadamente un tercio de los estudiantes universitarios experimentaron angustia durante la pandemia. No hubo un empeoramiento significativo en la salud mental a largo plazo.
Artículo 2: Predictive factors of the psychological impact of the COVID-19 pandemic on university students: a study in six Ibero-American countries	Alta prevalencia de angustia (46.15%). Los factores de riesgo incluyen el género femenino, neuroticismo y soledad. La resiliencia y el crecimiento postraumático fueron protectores.
Artículo 3: The Third Half: a positive psychoeducational program to promote well-being and mental health among early career researchers	El programa " <i>The Third Half</i> " redujo significativamente la ansiedad, el estrés y el afecto negativo en estudiantes de doctorado.
Artículo 4: Salud mental y bienestar en doctorandos mexicanos y españoles: un estudio transcultural	Los estudiantes de doctorado en España enfrentan mayores desafíos psicológicos que sus pares en México, lo que refleja diferencias en los contextos académicos y culturales.

Fuente. Elaboración propia

## 2. Relevancia y principales aportaciones

En las últimas décadas, la salud mental de los estudiantes universitarios, doctorandos e investigadores de carrera temprana ha emergido como un tema central en la investigación en psicología y salud pública, reflejando la creciente preocupación por su bienestar emocional y su impacto en el desempeño académico. En este contexto, la pandemia de COVID-19 representó un punto de inflexión, generando nuevas problemáticas y acentuando aquellas ya existentes. En particular, los estudiantes universitarios y los doctorandos han sido poblaciones altamente vulnerables debido a la incertidumbre académica, el aislamiento social y la carga emocional asociada a la crisis sanitaria.

Este estudio contribuye a la comprensión del impacto psicológico de la pandemia en estudiantes universitarios (artículo 1 y 2), explorando las consecuencias emocionales y cognitivas de este fenómeno en la población académica, se demostró que el 60% de los universitarios experimentaron síntomas relacionados con ansiedad, depresión y estrés, así como la identificación de factores que agravan la angustia psicológica, como el género femenino, neuroticismo y sentimientos de soledad. A su vez, se analizó la salud mental y el bienestar de los doctorandos (artículo 3 y 4), un grupo que, aunque fundamental en la producción de conocimiento y en el avance de la investigación, ha sido históricamente menos estudiado en términos de su salud mental y bienestar psicológico, se observó que la implementación de programas basados en psicología positiva, gamificación, exposición a espacios verdes reduce el efecto negativo, la depresión y ansiedad en doctorandos, permitiendo identificar que las universidades deben adaptar sus políticas considerando las diferencias culturales y académicas de cada país.

Los hallazgos de esta investigación no solo son innovadores en el campo, sino que proporcionan evidencia empírica crucial sobre la salud mental en estos grupos, ofreciendo insumos fundamentales para el diseño de estrategias de intervención y la formulación de políticas públicas dirigidas a mejorar el bienestar académico y reducir la deserción estudiantil. En particular, la conexión entre estos resultados y el Plan de Bienestar de las universidades catalanas, junto con la subvención de ayudas del programa *BENESTAR* para la promoción y mejora del bienestar emocional y la salud mental en universidades y entidades de investigación en Cataluña, fortalece su alineación con las políticas internacionales de la OMS y la ONU. Esto subraya la necesidad de abordar la salud mental desde una perspectiva integral, no solo para fundamentar la implementación de políticas públicas con impacto a nivel local y global, sino también para romper el estigma asociado a la salud mental y fomentar la normalización de la búsqueda de ayuda profesional.

### 3. Futuras líneas de investigación

Para avanzar tanto el conocimiento teórico como en las aplicaciones prácticas en el campo de ambientes saludables y sostenibles en la academia, esta tesis propone con los hallazgos analizados en los cuatro artículos varias áreas de investigación adicional en salud mental en estudiantes universitarios y doctorandos.

En primer lugar, esta investigación destaca la importancia de realizar estudios de seguimiento a largo plazo, destacando la adopción de una perspectiva temporal para evaluar cómo evolucionan los problemas en salud mental y el bienestar en los estudiantes desde el ingreso a la universidad hasta la finalización de sus estudios (grado - doctorado). Esto permitirá identificar factores de riesgo y protectores a largo plazo, así como evaluar con ello la efectividad de posibles intervenciones implementadas. Esta tesis también sugiere investigaciones sobre diferencias culturales, políticas y estructurales dado que el impacto de la presión académica y el enfoque de formación varía en cada país (como se ve en los resultados del cuarto artículo España y México) influyendo en la salud mental de los doctorandos.

La implementación del programa *The Third Half* mostro resultados prometedores en la reducción del malestar en doctorandos, pero se hace necesario probar su efectividad en otros contextos universitarios como estudiantes de grado y maestría. El equipo encargado de la implementación del programa eran profesionales en psicología con experiencia en trabajos prácticos de intervención y tuvieron todo un entrenamiento. Se recomienda para futuras investigaciones evaluar el papel potencial de las características del equipo implementador del programa en la mejora de los resultados.

Esta disertación permitió también observar como la pandemia impacto en la salud mental de los estudiantes de educación superior, con el crecimiento de la educación virtual y la digitalización del aprendizaje, también se abre una línea que es crucial para investigar como estos cambios pueden afectar la salud mental de los estudiantes, si las clases en línea reducen la ansiedad social o aumento del aislamiento, y con ello las universidades pueden tomar medidas que permitan adaptarse en la minimización de efectos negativos.

#### 4. Implicaciones prácticas

A partir del análisis de los datos de los cuatro artículos, podríamos hablar de varias implicaciones a nivel práctico que pueden ser aplicadas en el ámbito académico y de salud pública como son la formulación de políticas universitarias y el diseño de programas psicológicos para universitarios, doctorandos o EMCR.

***Implementación de programas de salud mental en el contexto universitario:*** los resultados nos demuestran que tanto los estudiantes universitarios como los doctorandos enfrentan diversos retos, por lo cual se requieren de intervenciones o programas diferenciados. Los universitarios pueden beneficiarse de campañas de concienciación, estrategias de prevención y acceso más flexibles a servicios psicológicos. Los doctorandos requieren programas específicos como *The Third Half*, adaptando las universidades servicios a las necesidades reales de cada grupo.

***Integración de la salud mental en políticas públicas:*** es importante que las universidades y centros de investigación reconozcan la salud mental como un factor clave para el éxito académico y profesional, implicando el rediseño de políticas de evaluación, sistemas de detección temprana de problemas de salud mental y capacitando al profesorado y personal administrativo sobre la importancia del tema – reconocimiento de señales de alerta.

***Promoción de una cultura de bienestar y apoyo social:*** hallazgos importantes reconocen el apoyo entre pares, mentorías e interacción positiva como espacios que ayudan a reducir la sensación de soledad y aislamiento de doctorandos en especial.

***Coordinación entre universidades y organismos internacionales:*** la OMS y la ONU enfatizan en la importancia de abordar los temas de salud mental en la educación superior como un desafío global donde se fomente un intercambio de buenas prácticas y el desarrollo de normativas que prioricen el bienestar de los estudiantes.

Todas estas implicaciones prácticas derivadas de la discusión nos resaltan la necesidad urgente de transformar estrategias institucionales de salud mental en el ámbito académico a través de un modelo integral de prevención, intervención y acompañamiento donde no solo se beneficie al estudiantado, sino que impacte directamente la calidad educativa, retención académica y desarrollo íntegro de las futuras generaciones.

## **Capítulo 6. Anexos**

### **Otros estudios en marco de la tesis doctoral**

## Anexos

Estos son otros estudios directamente relacionados en el que se enmarca esta tesis doctoral:

1. Muro-Rodríguez, A., & Jiménez-Villamizar, M. P. (2023). The Third Half: Toward the Creation of Healthier Research Careers. En *The Third Half: Toward the Creation of Healthier Research Careers*. Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10004671>

1.1. Jiménez-Villamizar, M. P., Sanz, A., & Muro, A. (2023). Mental Health and well-being after the COVID-19 pandemic: graduate and postgraduate students' crisis. En *The Third Half: Toward the Creation of Healthier Research Careers* (pp. 22-25). Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10005925>

1.2. Muro, A., Bonilla, I., & Jiménez-Villamizar, M. P. (2023). The Third Half: A psychoeducational program for well-being and mental Health promotion among Doctoral Studies. En *The Third Half: Toward the Creation of Healthier Research Careers* (pp. 52-57). Autonomous University of Barcelona. <https://doi.org/10.5281/zenodo.10005937>

2. Muro, A., Bonilla, I., Tejada-Gallardo, C., Jiménez-Villamizar, M. P., Cladellas, R., Sanz, A., & Torregrossa, M. (2022). The third half: A pilot study using evidence-based psychological strategies to promote Well-being among doctoral students. *International Journal of Environmental Research and Public Health*, 19(24), 16905. <https://doi.org/10.3390/ijerph192416905>



**Directores**

**Dr. Antoni Sanz Ruiz**

**Dra. Anna Muro Rodríguez**

**UAB**

**Universitat Autònoma  
de Barcelona**