



# The contribution of participation in meaningful activities on mental health during the COVID-19 lockdown in the Spanish population

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**Título:** Contribución de la participación en actividades significativas sobre la salud mental en población española durante el confinamiento por COVID-19.

**Resumen:** *Introducción:* Durante el confinamiento provocado por el COVID-19 en España, los ciudadanos tuvieron que dejar de realizar actividades de forma habitual, lo cual podría haber tenido un impacto en la salud mental. El objetivo de este estudio fue determinar la contribución de la participación en actividades significativas sobre la salud mental en la población española durante el confinamiento por COVID. *Método:* Se realizó una encuesta web de diseño transversal, donde se evaluó la salud mental (Cuestionario de Salud General: GHQ), la resiliencia (Escala de Resiliencia de Connor-Davidson), la participación en actividades significativas (Encuesta de Participación en Actividades Significativas), así como datos sociodemográficos. Se utilizó una regresión jerárquica-lineal para identificar las correlaciones clave. *Resultados:* Los participantes ( $N = 311$ ) informaron de una baja salud mental ( $M = 16,12/36$ ), y también de un menor nivel de resiliencia ( $M = 25,48$ ). Los resultados de la regresión revelaron que el 32,6% de la varianza del GHQ se explicaba significativamente por la posibilidad de tener en la vivienda un espacio exterior, la resiliencia y la participación en actividades significativas. La pérdida de actividades significativas se relacionó significativamente con la salud mental, contribuyendo significativamente controlando las otras variables ( $\beta = -.12$ ). *Conclusiones:* Aunque se necesitan estudios experimentales para determinar la causalidad, este estudio pone de manifiesto la relación entre la participación en actividades significativas y la salud mental durante el confinamiento.

**Palabras clave:** Salud mental. COVID-19. Confinamiento. Actividades significativas. Resiliencia. Terapia ocupacional.

**Abstract:** *Introduction:* During the lockdown caused by COVID-19 in Spain, citizens had to stop performing activities in the usual way, which could have had an impact on mental health. The aim of this study was to determine the contribution of participating in meaningful activities on mental health in the Spanish population during the COVID-19 lockdown. *Method:* A cross-sectional online survey was developed and administered, where mental health (General Health Questionnaire), resilience (Connor-Davidson Resilience Scale), participation in meaningful activities (Engagement in Meaningful Activities Survey) and socio-demographic data were assessed. A hierarchical-linear-regression was used to identify key correlations. *Results:* The participants ( $N = 311$ ) reported low mental health ( $M = 16.12/36$ ) and a lower level of resilience ( $M = 25.48$ ). The results of the regression revealed that 32.6% of the variance of the GHQ was significantly explained by the living space, including an outdoor space, resilience and participation in meaningful activities. The loss of meaningful activities was significantly related to mental health, with a significant contribution when controlling for the other variables ( $\beta = -.12$ ). *Conclusion:* Although experimental studies are needed to determine causality, this study highlights the relationship between participation in meaningful activities and mental health during the lockdown.

**Keywords:** Mental health. COVID-19. Lockdown. Meaningful activities. Resilience; Occupational therapy.

## Introduction

The coronavirus disease (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Esakandari et al., 2020), which induced the start of a viral pandemic on December 31<sup>st</sup>, 2019, in Wuhan, China (Lechien et al., 2020). A few months after the first case, cases

began to be identified in other Asian countries, Iran and European countries such as Italy, Spain, France, Germany and the United Kingdom (Mullol et al., 2020). As of early August 2020, the COVID-19 disease had already affected 188 countries around the world (Mullol et al., 2020). In Spain, the first case was detected on February 2<sup>nd</sup>, 2020, reaching 2,705,001 confirmed cases and 50,806 deaths on January 30<sup>th</sup>, 2021.

The exponential increase in infection worldwide, and its severity, led the World Health Organisation (WHO) to recognize the COVID-19 outbreak as a global pandemic on March 11<sup>th</sup>, 2020. For this reason, on March 14<sup>th</sup>, the Spanish government declared a nationwide state of alert and, two days later, a formal lockdown was imposed (Royal Decree 463/2020, March 14<sup>th</sup>). Nursery, primary and secondary

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schools, colleges and universities had already started to close between the 9<sup>th</sup> and 13<sup>th</sup> of March, although they remained active on an online basis. Due to the established lockdown, only companies performing an 'essential service' continued their normal activity. The Spanish population was confined to their homes, being allowed to go out only to buy food, provide care for dependent people, work and walk the dog (Gismero-González et al., 2020).

On April 25<sup>th</sup>, a slow and progressive lifting of the restrictions started with letting children out for one hour a day (Orden SND/370/2020, April 25<sup>th</sup>). A week after this, a four-phase process of unlocking started (Pérez et al., 2021). In phase 0, people could go out to practise individual sports, stores could offer services by making previous appointments, and restaurants could open for takeaway. People could also take a daily walk accompanied, at most, by a partner and always within a radius of one kilometer from their homes. The walks and sports practices had a time limit. In phase 1, restaurants with an outdoor area could open partially, and little shops and hotels could also open, but were not allowed to use the common areas. Religious and sports activities were also allowed, although with restrictions. In phase 2, indoor restaurants and spaces that offer cultural activities could open with capacity restrictions. Nursery and further education (only for students preparing for university) opened their doors. In phase 3, mobility from communities was allowed, although store capacity restrictions were maintained. Thereafter, the "new normality" started, although keeping hygiene and social distance measures.

The lockdown is understood as a massive restrictive quarantine (Pandey et al., 2020). This has been imposed years ago on specific occasions to fight other viral outbreaks, such as the severe acute respiratory syndrome (SARS) in certain areas of Canada and China in 2003, and the Ebola outbreak that took place in West African villages in 2014 (Hernández-López et al., 2021; Pandey et al., 2020). It is already known that this quarantine entailed a difficult situation to cope with, which implies separation from loved ones, loss of freedom, and insecurity in the face of the possibility of being infected, as well as boredom. In turn, this can cause negative effects on people (Gismero-González et al., 2020).

However, the COVID-19 lockdown we have experienced appears to be the most extensive and restrictive quarantine to date (Pandey et al., 2020). The measures imposed have significantly changed people's daily lives and led to a disruption of self-regulated behaviour and a reduction in social connections, resulting in specific mental health problems, especially in vulnerable people, such as people with mental disorders (Benke et al., 2020). Alterations in psychological well-being such as anxiety, depression, irritability, inattention, mood changes, sleep disorders, fears, family violence and suicide attempts have been observed in different population groups during and after the lockdown, even reporting an increase in these symptoms as it lengthened over time (Every-Palmer et al., 2020; Panda et al., 2021; Planchuelo-Gómez et al., 2020; Scarpelli et al., 2021).

This impact of confinement on people's mental health during lockdown was uneven in different population groups, finding that young adults between 19 and 30 years old showed higher levels of anxiety, stress, hopelessness, depression and sleep problems than older people (Planchuelo-Gómez et al., 2020). In turn, the impact on psychological well-being was more prevalent in women than in men (Passavanti et al., 2021; Ren et al., 2021). That is why being a young person, woman, and having a previous illness or pre-school children were considered risk factors for suffering alterations in mental health during confinement (Horesh et al., 2020; Liu et al., 2020).

There is a general agreement that the lockdown impacted the daily activities of individuals moving from structured to chaotic daily routines (Ren et al., 2021). This might influence health and the quality of life, since there is evidence that an active participation in daily activities, community activities and meaningful activities has a positive influence on the health and quality of life of people (Petruševičienė et al., 2018; Yaya et al., 2020). Meaningful activities are personally and/or culturally relevant activities which people, in some cases driven by personal values, enjoy and/or feel competent with (Eakman, 2011; B. Goldberg et al., 2002; Plow et al., 2015). Participating in such activities contributes to individual well-being and the satisfaction of psychological, biological and cultural needs for a meaningful life, thus improving people's emotional, cognitive and physical state (Chen, 2020; Eakman et al., 2010; Han et al., 2016; Petruševičienė et al., 2018; Plow et al., 2015). Previous studies have shown the positive impact of participating in daily activities and meaningful activities on mental health (Bjorkedal et al., 2016, 2020; Eklund & Brunt, 2020; B. Goldberg et al., 2002; Kondo et al., 2008; National Guideline Alliance (UK), 2020; Petruševičienė et al., 2018). Thus, as a consequence of the prolonged stay at home due to confinement, the restriction of participating in daily activities and meaningful activities could lead to mental health problems, which will need to be specifically addressed. Some studies have shown that engaging in physical activities and maintaining routines of daily life during lockdown may have been practical strategies to mitigate the potentially harmful mental health consequences associated with the stressors of the pandemic (Ren et al., 2021). More specifically, a recent study (Cruyt et al., 2021) has shown that engaging in meaningful activities contributed significantly to the mental health of the Belgian population in the period of confinement. However, the extent of this phenomenon in the Spanish population during the COVID-19 lockdown has not been analysed to date.

The aim of this study was to determine whether people have continued to carry out their activities during lockdown or if these activities had been interrupted. This study also examined how people adapted their activities in order to maintain them, as well as the specific contribution of participating in meaningful activities on the mental health of Spanish residents during home lockdown.

The hypothesis of this study is two-folded. Firstly, we hypothesised that people found ways to adapt activities to maintain them, especially those that involved contact with others and those that used to be carried out outdoors. Secondly, we hypothesised that the level of participation in meaningful activities contributed substantially to the mental health of residents in Spain, even when controlling for other variables that could also explain this aspect.

## Method

A cross-sectional online survey was conducted with a sample of adults in Spain, through the Limesurvey© online platform. The survey was translated into Spanish from the study conducted by Cruyt and colleagues (2021) in Belgium. Four Spanish health science researchers and occupational therapists, with great understanding of the English language, carried out the cross-cultural adaptation of the questionnaire questions, which were not standardised assessment tools. Doubts about the meaning of some items were discussed with Ellen Cruyt's team in order to reach an appropriate formulation of the question. The study adhered to the strengthening of the statement of reports of observational studies in epidemiology (STROBE) (von Elm et al., 2008).

### Procedure and participants

The participants were recruited through social networks (Facebook, Twitter) and email (sent to the authors' 'associations' networks).

The web-based self-reported questionnaire was distributed online in Spain between May 14<sup>th</sup> and June 12<sup>th</sup>, 2020, with data collection taking place between these dates. For this study, and due to the period in which the data were collected, the participants were in phases 0, 1 or 2.

The inclusion criteria for participants were adults with Internet access, aged 18 and over, living in Spain, and who were currently in phase 0, 1 or 2, thus excluding people whose communities were already in phase 3. Since we were in a pandemic situation, the questionnaire could only be accessed online, through the Limesurvey© online platform.

This study was approved (April 10<sup>th</sup>, 2020) by the Ethical Committee of Ghent University (BC-07585). The participants gave their informed consent by clicking on the survey's 'next page' button, confirming that they read the information. All methods were carried out in accordance with the relevant guidelines and regulations.

### Measures

Following the study carried out by (Cruyt et al., 2021), the questionnaire included standardised tools, sociodemographic questions and questions related to carrying out activities.

### Part 1: Socio-demographic and activity-related data

The first part of the questionnaire included the following descriptive variables: age, sex, education level, marital status, having children, employment situation (with work options), living situation, region of residence, living area, living space, phase of confinement in which they were found, health condition and whether the participants were informal caregivers or received informal care.

A fixed list of 18 daily activity categories linked to the nine domains of the International Classification of Functioning and Disability and Health (ICF) (OMS, 2001) was presented to the participants.

The participants were asked to indicate whether or not they performed each of these daily activities prior to the COVID-19 crisis. If so, they had to indicate whether they adapted the activity during the COVID-19 lockdown. Four category options were provided: (1) as usual (in the same way compared to before the COVID-19 crisis); (2) I carry out the activity in another setting (for example, at home instead of at the office); (3) in another way (for example, shopping online instead of shopping on the street); and (4) I do another activity that evokes the same purpose or meaning (for example, going for a walk instead of going to the gym). It was possible to select one or more option responses.

### Part 2: Instruments

*The general health questionnaire (GHQ).* The mental health of the participants was assessed using the 12-item version of the GHQ, which is a valid and reliable instrument to assess psychological well-being and distinct aspects of distress (Goldberg & Hillier, 1979). The Spanish version of this questionnaire showed good internal consistency (Cronbach's alpha = .76), as well as robust external validity with the Inventory of Situations and Responses of Anxiety (ISRA) (.82; Factor II, .70; Factor III, .75) (Sánchez-López & Dresch, 2008).

Each item has four response options using a Likert scale (0 = 'not at all'; 1 = 'not more than usual'; 2 = 'somewhat more than usual'; or 3 = 'much more than usual'). The total sum of scores ranges from 0 to 36, with higher total scores reflecting higher levels of psychological distress. A score of 12 or less in adults indicates psychological well-being (Goldberg et al., 1997).

*Connor-Davidson Resilience Scale (CD-RISC).* The CD-RISC is a tool that measures personal resilience, which is a concept about healthy and adaptive functioning after adversity (Connor & Davidson, 2003; Southwick et al., 2014). The CD-RISC consists of 10 items and is scored on a 5-point Likert scale that ranges from 0 = 'not at all true' to 4 = 'true almost all the time'. The total score ranges from 0 to 40 points. A higher score indicates greater resilience (Campbell-Sills & Stein, 2007). The CD-RISC is a widely recognised and well-validated resilience measure in Spanish (Notario-Pacheco et al., 2011) showing good internal consistency (Cronbach's al-

pha = .86) and a clear one-dimensional structure (García-León et al., 2019).

*Engagement in Meaningful Activities Survey (EMAS).* The 12-item EMAS was used. This measure has been developed to assess the frequency with which people engage in significant activities in their lives, according to a series of dimensions (Eakman, 2012). The participants were asked to indicate how often they carry out each statement (for example, "The activities I do reflect the type of person I am") on a 4-point Likert scale, ranging from 1 = "rarely" to 4 = "always". The total score ranges from 12 to 48. The importance of a person's activities can be low (EMAS < 29), moderate (EMAS 29 - 41), or high (EMAS > 41). The EMAS has been shown to have very good convergent and predictive validity relative to measures of meaning and purpose in life and mental health (Eakman, 2013, 2014; Cruyt et al., 2021), as well as a good internal consistency ( $\alpha = .81-83$ ) (Lacroix et al., 2018). This tool has been translated and validated in the Spanish context (Fernández-Solano et al., 2022; Prat et al., 2019).

**Data analysis**

Initially, the sample data were described, and descriptive statistics were also used to indicate the type of activities that people maintained and stopped doing due to COVID-19, as well as the adaptation they made.

*Step 1: bivariate analyses*

Different bivariate analyses were carried out to determine whether there were differences in the GHQ score for the different nominal and ordinal variables using the Mann-Whitney U-test (gender, having children, living area, informal caregiver, receiving care, living space) and the Kruskal-Wallis test (marital situation, educational level, employment situation, living conditions, confinement phase, work options, health conditions). Variables for which there were significant differences in the GHQ score were entered, in step 2, as explanatory variables in the regression model. In the same way, the Spearman's correlation coefficients were obtained for the continuous variables (age, EMAS and CD-RISC) and those that obtained a significant correlation index with the GHQ score were selected for the regression analysis in step 2.

*Step 2: multivariate analysis*

A multivariate analysis was applied using hierarchical multiple linear regression analysis. All categorical variables with more than two categories were transformed into "dummy variables" (e.g., the categorical variable "marital situation" became 1 = married, 2 = not married). In model 1, the regression coefficients were calculated for the control variables. The factor "meaningful activities" was added in model 2 to examine the contribution of the frequency of significant activities on mental health, controlling for the re-

maining key confounding variables (demographic and personal characteristics). The multicollinearity of the models was examined according to the variance inflation factor (VIF) calculations. F-values under .10 were automatically removed, as they are considered insignificant variables.

All statistical analyses were performed using SPSS 26 (SPSS Inc, Chicago, IL), and  $p < .05$  was considered significant in all analyses.

**Results**

**Descriptive results**

*Sociodemographic variables*

A total of 311 participants, recruited by convenience sampling, completed the questionnaire. Table 1 presents the descriptive data of the variables.

**Table 1**  
*Overview description of the participants (N = 311; with exceptions noted)*

Sociodemographic variables			
Mean age (SD)	36.85 (13.09) (Min = 18, Max = 75)		
		%	N
Gender	Women	74.9	233
	Men	25.1	78
Marital status	Married/Living together	58.5	182
	Divorced	5.5	17
	Single	35	109
	Other	1	3
Education level	Primary Education	1.9	6
	Secondary Education	4.8	15
	Baccalaureate	11.3	35
	University/college	82	255
Health condition	Healthy	89.1	277
	Acutely ill	2.3	7
	Chronically ill	7.1	22
	Mentally ill	1.6	5
Working status (n = 252)	Employed	66.2	206
	Unemployed	11.3	35
	Retired	3.5	11
Working options (if employed) (n = 204)	I work from home	37	115
	I work as usual	18.3	57
	Technically unemployed	7.1	22
	Other	3.2	10
Student	Yes	29.3	91
	No	70.7	220
Having children	Yes	40.8	127
	No	59.2	184
Living situation (n = 310)	Living alone	8.4	26
	Living alone with children	3.2	10
	Living together without children	20.9	65
	Living together with children	30.9	96
	Living with parents, family	34.1	106
	In a dorm with other students	2.3	7
Phase	0	44.7	139
	1	43.7	136
	2	11.6	36
Living area	Urban	77.5	241
	Rural	22.5	70

		%	N
Living space	House, apartment with garden or balcony	74.6	232
	Studio, apartment without balcony	2.6	8
		22.8	71
Giving informal care	Yes	22.2	69
	No	77.8	242
Receiving informal care	Yes	6.8	21
	No	93.2	290

Note: Min = Minimum, Max = Maximum.

### Activities during the COVID-19 lockdown

The impact of confinement on activities carried out before and during the COVID-19 home lockdown (before re-

striction began to be lifted) are shown in Table 2. A high percentage of people had stopped doing social activities (36.4% of 258 people), caring for others outside the family (33.8% of 74 people) and free time activities outside (23.3% of 236 people). Most adults who volunteered ( $n = 32$ ) before the COVID-19 crisis had to quit these activities. Activities that continued indoors, alone or with the closest family members, such as leisure activities indoors ( $n = 288$ ), taking care of the family ( $n = 143$ ), housekeeping ( $n = 296$ ), doing chores in the house ( $n = 213$ ) and self-care ( $n = 306$ ) and tasks related to being a student ( $n = 146$ ) were largely retained.

**Table 2**

Percentage of continuity in the participation of activities during COVID-19 lockdown.

	'Stopped doing' Participants who discontinued the activities	'Still do' Participants who maintained the activities
Self-care ( $n = 306$ )	.7%	99.3%
Leisure activities indoors ( $n = 288$ )	1.4 %	98.6%
Social activities outdoors ( $n = 258$ )	36.4 %	63.9 %
Household ( $n = 296$ )	.7%	99.3%
Leisure activities outdoors ( $n = 236$ )	23.3%	76.6%
Taking care of my health through sports ( $n = 225$ )	7.6%	92.4%
Taking care of my health through cooking ( $n = 230$ )	1.3%	98.7%
Sexuality ( $n = 246$ )	8.1%	91.9%
Attending a training ( $n = 87$ )	8%	92%
Doing chores in and around the house ( $n = 213$ )	1.4%	98.6%
Going to work ( $n = 211$ )	12.3%	87.7 %
Taking care of the family ( $n = 143$ )	2.1 %	97.9 %
Taking care of others outside the family ( $n = 74$ )	33.8%	66.2 %
Volunteering work ( $n = 32$ )	40.6%	59.4%
Taking care of my health through mental activities ( $n = 104$ )	10.6 %	89.4%
Student work ( $n = 146$ )	1.4%	98.6%
Doing chores for other people ( $n = 108$ )	10.2%	89.8%
Religious activities ( $n = 32$ )	15.6%	84.4%

Note:  $n$  = number of participants who performed the activity before the COVID-19 crisis.

Table 3 shows that the participants who continued to carry out the activities included a series of changes in order to maintain them.

Self-care, home, cooking, activities related to sexuality and housework activities inside and outside the home were carried out in the same way as before the home lockdown, as well as taking care of other people outside the family and taking care of one's own health through mental activities.

The leisure activities that were performed outside and in-

side the household, as well as sports, work, and religious activities, were carried out mostly in an environment different from the pre-COVID one. The way of doing some activities changed mainly for outdoor social activities, as well as attending a training, volunteer and student work and doing chores for other people. For family care, the highest percentage of responses was concentrated in the response option that indicates that a comparable activity was performed.

**Table 3**

Percentage of the type of changes necessary to maintain participation in activities during the COVID-19 lockdown.

	Not different	In another environment	In another way	Comparable activity
Self-care ( $n = 304$ )	52.96%	10.85%	29.28%	14.14%
Leisure activities indoors ( $n = 284$ )	27.82%	43.66%	21.13%	30.28%
Social activities outdoors ( $n = 165$ )	9.09%	33.3%	66.67%	32.73%
Household chores ( $n = 294$ )	69.05%	10.88%	17%	9.18%
Leisure activities outdoors ( $n = 181$ )	13.26%	62.32%	41.44%	11.60%
Taking care of my health through sports ( $n = 207$ )	20.29%	49.76%	45.41%	24.15%
Taking care of my health through cooking ( $n = 227$ )	50.66%	25.11%	27.75%	7.93%
Sexuality ( $n = 226$ )	69.91%	5.31%	22.12%	7.52%

	Not different	In another environment	In another way	Comparable activity
Attending a training ( <i>n</i> = 80)	17.50%	48.75%	68.75%	2.50%
Doing chores in and around the house ( <i>n</i> = 210)	50.48%	13.33%	33.33%	17.14%
Going to work ( <i>n</i> = 185)	23.78%	54.05%	31.89%	2.70%
Taking care of the family ( <i>n</i> = 140)	32.14%	25.71%	16.43%	40.71%
Taking care of others outside the family ( <i>n</i> = 49)	46.94%	22.45%	30.61%	4.08%
Volunteering work ( <i>n</i> = 19)	15.79%	36.84%	57.89%	10.53%
Taking care of my health through mental activities ( <i>n</i> = 93)	39.78%	9.68%	37.63%	21.51%
Student work ( <i>n</i> = 144)	18.75%	52.08%	56.25%	1.39%
Doing chores for other people ( <i>n</i> = 97)	31.96%	16.49%	34.02%	24.74%
Religious activities ( <i>n</i> = 27)	11.11%	70.37%	37.04%	11.11%

*Mental health, resilience and meaning in activities*

GHQ (Cronbach’s Alpha = .89), EMAS (Cronbach’s Alpha = .89), and CD-RISC (Cronbach’s alpha = .88) showed a good-excellent internal consistency.

The mean GHQ score was 16.12 for the general sample. Based on the threshold score of 12 for adults, the mean score is above the threshold score, which reflects higher levels of psychological morbidity or distress.

The participants obtained a mean score of 25.48 on CD-RISC. Thus, they showed a lower level of resilience, since the cut-off score in this tool is 29 for adults.

Based on the EMAS categories, 56 participants experienced low meaning in their activities (score < 29), 223 participants experienced a moderate sense of meaning in their activities (score between 29 and 41), and 32 experienced high meaning in their activities (score > 41).

**Bivariate analysis**

The independent variables that were statistically significantly associated with mental health (GHQ) in the Mann-Whitney U-test were gender, having children, being a student, living area, living space, giving informal care and receiving informal care. The results are provided in Table 4. The men scored significantly lower in the GHQ than the women (*p* = .040), which indicates better mental health. The participants who had children scored significantly lower in the GHQ than those without children, which indicates better mental health (*p* = .001). Non-students indicated a lower GHQ score (better mental health) than students (*p* < .001). The participants whose living space consisted of a garden or balcony had a lower score in the GHQ, which reflects better mental health (*p* = .033). There were no significant differences between those who lived in a rural or urban area (*p* = .425), those who provided care to others (*p* = .224) and those who did not, or between those who received care and those who did not (*p* = .566).

**Table 4**

Overview bivariate analysis results (1): Mann-Whitney U-test: differences between groups (dichotomous) for the General Health Questionnaire (*N* = 311).

	GHQ Mean (SD)	Mann-Whitney U	Z	<i>p</i>
<i>Gender</i>				
Women	16.57 (7.32)	7677.5	-2.053	.040*
Men	14.76 (7.17)			
<i>Having children</i>				
Yes	14.33 (6.21)	9099.5	-3.319	.001*
No	17.35 (7.76)			
<i>Student</i>				
Yes	18.55 (7.87)	7417.5	-3.597	<.001*
No	15.11 (6.84)			
<i>Living area</i>				
Rural	16.86 (7.69)	7907	-.798	.425
Urban	15.90 (7.20)			
<i>Living space</i>				
Balcony/garden	15.49 (7.09)	6862	-2.129	.033*
No balcony/garden	17.72 (7.68)			
<i>Providing informal care</i>				
Yes	16.96(7.31)	7549	-1.215	.224
No	15.88 (7.31)			
<i>Receiving informal care</i>				
Yes	15.05 (6.37)	2817	-.574	.566
No	16.19 (7.38)			

Note: GHQ= General Health Questionnaire; higher scores in GHQ means lower mental health; SD = Standard Deviation

Marital status, employment status, living conditions, meaning of activities, resilience, and age were the significantly independent variables obtained through the Kruskal-Wallis test associated with mental health. The results are displayed in Table 5. Being married / living together scored significantly lower in the GHQ than being alone (*p* = .001), indicating better mental health. The participants who were retired obtained significantly lower scores in the GHQ than unemployed people (*p* = .010). Those who lived together (couples) with children (*p* = .001) or without children (*p* = .04) scored lower in the GHQ than the participants who lived with their parent(s) or family (relatives).

**Table 5**

Overview bivariate analysis (2): Kruskal-Wallis test; differences between groups (categorical) for the General Health Questionnaire according to Mann-Whitney U-test (N = 311).

	GHQ Mean (Range; SD)	GHQ Median (inter quartile)	p-value Kruskal-Wallis	p-value Mann-Whitney U
<i>Marital status</i>			.007	.268 between 1 and 2
1. Married/Living together	14.93 (2-36; 6.93)	13 (10)		.001 between 1 and 3
2. Divorced	16.71 (6-29; 6.16)	16 (10)		.598 between 1 and 4
3. Single	18.03 (5-36; 7.54)	18 (13)		.632 between 2 and 3
4. Other	15 (6-33; 15.59)	6 (-)		.347 between 2 and 4 .223 between 3 and 4
<i>Education level</i>			.752	
1. Primary education	16.50 (7-26;6.92)	16 (12)		
2. Secondary education	15.40 (6-27;7.21)	15 (10)		
3. Baccalaureate	17.34 (3-36;7.97)	15 (11)		
4. University	15.98 (2-36;7.26)	15 (11)		
<i>Health condition</i>			.375	
1. Healthy	16.07 (2-36;7.27)	15 (10)		
2. Acutely ill	17.29 (5-28;8.84)	19 (17)		
3. Chronically ill	15 (5-31;6.91)	13 (10)		
4. Mentally ill	22 (13-36;9.03)	20 (16)		
<i>Working status</i>			.027	.060 between 1 and 2
1. Employed	15.33 (2-36;7.12)			.081 between 1 and 3
2. Unemployed	17.89 (5-36;8.00)			.010 between 2 and 3
3. Retired	11.45 (3-19;5.14)			
<i>Working options</i>			.426	
1. I work from home	15.94 (3-33;7.16)	15 (11)		
2. I work as usual	14.18 (5-31;6.17)	13 (7)		
3. Technically unemployed	15.86 (2-36;9.10)	13.50 (13)		
4. Other	17 (8-25;6.15)	17.50 (12)		
<i>Living situation</i>			.013	.504 between 1 and 2
1. Living alone	16.62 (5-33;8.24)	14.50 (12)		.322 between 1 and 3
2. Living alone with children	17.60 (10-27;5.32)	17 (8)		.290 between 1 and 4
3. Living together without children	14.83 (2-36;7.60)	13 (10)		.296 between 1 and 5
4. Living together with children	14.49 (5-28;6.01)	14 (10)		.776 between 1 and 6
5. Living with parent(s), family	18.21 (5-36;7.70)	18 (12)		.156 between 2 and 3
6. In a dorm with other students	15.43 (5-26;8.26)	14 (18)		.146 between 2 and 4 .951 between 2 and 5 .453 between 2 and 6 .981 between 3 and 4 .004 between 3 and 5 .784 between 3 and 6 .001 between 4 and 5 .773 between 4 and 6 .370 between 5 and 6
<i>Phase</i>			.387	
0	16.05 (2-36; 7.30)	15 (12)		
1	16.48 (5-34; 7.053)	16 (11)		
2	15 (3-36; 8.40)	12.50 (11)		

Note: To increase the interpretability of the results, the means and median were included in this table.

The Spearman's Rho test showed a significant moderate relationship between EMAS-GHQ ( $R_s = -.376, p < .001$ ) and CD-RISC-GHQ ( $R_s = -.494, p < .001$ ). Age was also significantly related to GHQ ( $R_s = -.255, p < .001$ ) (Table 6).

The only VIF factors that showed multicollinearity problems were "living conditions" and "marital status", which reflect whether they live alone or share their life with someone. For a VIF factor of 1, it was decided to exclude living conditions. Similarly, the age variable was closely related to having children ( $r = -.741; p < .001$ ) and, since it reflects a vital moment, it was decided to eliminate the age variable.

**Table 6**

Overview bivariate analysis (3): Spearman's correlation test: associations between mental health and continuous independent variables in the study sample (N = 311).

	Spearman's Rho	p
EMAS	-.376	<.001
CD-RISC	-.494	<.001
Age	-.255	<.001

Notes: EMAS = Engagement in Meaningful Activities Survey; CD-RISC = Connor-Davidson Resilience Scale.

## Multivariate analysis

In the next step, mental health was regressed at all seven variables, which were statistically significantly related to mental health during bivariate analysis.

The results of the hierarchical regression analysis are displayed in Table 7. The seven control variables (gender, having children, living space, working status, marital status, being a student, and resilience) were entered at once into Model 1 and accounted significantly together for 31.6% of the variance in mental health ( $p < .001$ ). After entering *meaning in activity* (EMAS), the total variance explained by the model was 32.6% ( $p < .001$ ). In Model 2, EMAS ( $p = .04$ ) together with living space ( $p = .045$ ) and resilience ( $p < .001$ ) contributed significantly to lower scores on the GHQ (better mental health).

**Table 7**

*Hierarchical regression analysis of demographical data, personal factors and meaning in activities associated with mental health.*

	Mental health					
	Model 1			Model 2		
	B	SE B	$\beta$	B	SE B	$\beta$
<b>Control variables</b>						
Gender	.622	.815	.037	.663	.810	.040
Having children	.942	.878	.064	1.002	.874	.068
Living space	1.698	.835	.099*	1.671	.831	.097*
Working status	-.287	.879	-.019	-.248	.875	-.016
Marital status	-.578	.826	-.039	-.457	.824	-.031
Student	-1.281	1.021	-.080	-1.283	1.016	-.080
Resilience (CD-RISC)	-.532	.054	-.489**	-.456	.065	-.419**
<b>Main effects</b>						
EMAS				-.141*	.069	-.122*
R <sup>2</sup>			.316**			.326*
Adjusted R <sup>2</sup>			.300**			.308*
R <sup>2</sup> change			.316**			.010*

Notes: \*\*significant result ( $p < .001$ ), \*significant result ( $p < .05$ ); EMAS= Engagement in Meaningful Activities Survey; CD-RISC= Connor-Davidson Resilience Scale.

## Discussion

The present study aimed to analyse the participation in daily and meaningful activities of Spanish adults during home confinement by COVID-19, as well as its impact on and relationship with mental health. When interpreting the data, it is important to note that it was mostly women who responded to the questionnaire (74.9%). Except for the differentiation for the level of mental health (dependent variable) between men and women, the discussion of the results is done for all participants together.

Overall, the participants of the present study (36.85 years) showed a greater alteration of psychological well-being and mental health (GHQ = 16.12) during the period of confinement compared to another similar group of Spanish adults (41.75 years) in a pre-COVID-19 situation (GHQ = 8.52) (Sánchez-López & Dresch, 2008). This fact shows that confinement has had a substantial impact on the state of

mental health of the population worldwide, due to mobility restrictions, as other studies have also shown in other populations, such as Turkish (Göl & Erkin, 2021) and Belgian (Cruyt et al., 2021) student populations, making use of the same assessment tool.

For the well-being of the population, it is essential to explain what factors have contributed to reducing the level of mental health or, on the contrary, those that have contributed to improving it. In this sense, this study shows that resilience is the most relevant variable in explaining the level of mental health. In addition, and as a novelty, our study demonstrates that participation in meaningful activities during the confinement period also explains, beyond the contribution of other sociodemographic variables, the reported mental health level of the population in a positive way. These results are in line with what was already discovered by Cruyt et al (2021) in a sample with a Belgian population. This may be due to the fact that, by participating in meaningful activities, people can meet basic needs, such as autonomy, competence and relatedness, which, in turn, makes one's life more meaningful (Eakman, 2013) and increases the perceived well-being (Steger et al., 2008). In the study carried out by (Hooker et al., 2020) with a sample of people with a mean age of 43.3 years, it was found that, when people did more meaningful activities than usual, positive mood increased. In addition, people who participated in a greater number of meaningful activities during the study reported greater vitality and satisfaction with life. Therefore, it is essential within public health programmes, especially after this pandemic, to carry out intervention programmes that increase participation in meaningful activities, with the aim of improving the mental health of the population, using interventions focused on increasing awareness of the meaning attached to such activities, as is proposed by Hooker et al., (2020).

In relation to the maintenance of the different types of activities by the participants, the results of this study show that all the activities that the participants carried out at home before confinement were maintained, i.e., those of self-care and home organisation, such as those aimed at taking care of oneself, through sports activities, cooking or, to a lesser extent, activities such as mental activities, sexual activities, taking care of others or activities associated with the student role. However, and although we do not have pre-pandemic reference data for the Spanish population, following the interpretation of Cruyt et al. (2021), these activities could have been carried out with the simple purpose of satisfying basic needs, without being able to cover psychological needs that contribute substantially to well-being (Eakman et al., 2010).

On the contrary, as might be expected, since phase 0 ( $n = 139$ ) involved home confinement and phase 2 ( $n = 136$ ) involved mobility restrictions, the activities that most participants stopped doing were those performed in the outside or that involved contact with people outside the family (volunteering and leisure or social activities outdoors). The lack of opportunities to regularly participate in occupations that are



meaningful or necessary due to factors beyond the person's control, such as home confinement, results in occupational deprivation (Whiteford, 2000). Studies in different groups have suggested that the effects of occupational deprivation can include poor health, loss of economic income, loss of capacity and / or social exclusion (Whiteford, 2000), and difficulties in structuring time in a meaningful way (Long et al., 2008).

However, people, as the data show, tried to adapt the way in which they carried out the activities to continue doing them. Work, volunteering, leisure and sports activities, religious activities and those related to studying, were those that required a modification of the environment or way of performance during this period. People wanted to continue keeping themselves busy, since it allows them to develop as people and as members of society (Reed et al., 2011).

Although participation in meaningful activities was a factor that substantially contributed to the mental health of the study population, it should be noted that the contribution of resilience was even greater. During the entire pandemic situation, people faced different continuous stressors, which forced them to minimise the psychological anguish that was generated by them (Chen & Bonanno, 2020). These results are in line with the study of Cruyt et al. (2021), in which this variable also contributed significantly to the GHQ score. Furthermore, as is shown in other studies, resilience mediates the link between changes in daily lifestyles and mental health outcomes, associating higher resilience scores with a reduced rate of anxiety and depression (Barzilay et al., 2020). Moreover, resilience reduced the effects of pandemic fatigue on mental health, sleep quality and job satisfaction in healthcare professionals.

Finally, another sociodemographic factor that contributed to the mental health of the participants was having an outdoor area in the house, which could be a balcony, terrace, patio or garden (Aerts et al., 2021; Dzhambov et al., 2021; Pouso et al., 2021). This may be partly due to the fact that contact with nature might have mitigated the social isolation (Cartwright et al., 2018) that occurred in the period of confinement and / or that there is a space for recovery from stress and promotion of physical activity (White et al., 2020). In the present study, as is also reported in the study of Cruyt (2021), this factor has proven to be a determining factor, having a direct impact on the mental health of the population (Table 7).

The other sociodemographic variables, such as gender, having children, being a student, marital status and working status, did not contribute significantly to determining mental health in the pandemic, although they obtained significant differences in the bivariate analysis. This may be due to the fact that, although they have an influence on the mental health of the population, its contribution is no longer significant when the rest of the variables that had more weight were included, which gives even more relevance to resilience, participating in significant activities and having an outdoor space.

However, it is necessary to discuss that the women in this study showed poorer mental health (higher scores on the GHQ) than the men, which is in line with the results of previous studies that compared both populations (Jacques-Aviñó et al., 2020). In general, regardless of gender, the participants who were married or had a partner also showed better mental health than those who were in opposite situations during confinement, which can be explained by the support received by the other member of the couple (Holt-Lunstad et al., 2008). Although having children during confinement seems to be a factor associated with worse mental health, both the present study and that of Cruyt et al. (2021) showed significant results in the opposite direction. Although in the study by Cruyt et al. (2021) these data could be due to a low percentage of people with children, in our case the sample was much more balanced. Future studies should specify other factors that could substantially influence the results, such as the number of children or their age.

In turn, the bivariate analyses show that the participants who did not have the role of student presented better mental health than students, which may be due, as previous studies also reflect, to the fact that the closure of educational centres, living in confinement and the risk of infection generated anxiety, depression and sleep disorders. These alterations directly affected the educational process, psychological health and well-being of the students, causing, in some cases, post-traumatic stress disorder (Evans et al., 2021; Ma et al., 2021). Finally, the unemployed participants, being in a situation of productive inactivity, reflected poorer mental health, in line with what was reported by Posel et al., (2021), where the negative effect on mental health of unemployment during the pandemic was demonstrated (Posel et al., 2021).

#### Limitations of the study

This study has some limitations that need to be highlighted. One of the main limitations is that the sample is not representative of the entire Spanish population, and the data, therefore, must be treated with caution, e.g., due to the greater number of female participants in the sample. All the data collected here were self-reported by the participants through a virtual platform, due to the sanitary conditions in force during the study period. Thus, this may have been a bias in the people who participated, who should have a minimum of digital knowledge. Similarly, the data shown here did not indicate causal relationships, since the study was not experimental.

## Conclusions

The period of confinement caused by the COVID-19 pandemic has generated a worsening of mental health in the Spanish population. However, this study demonstrates a number of factors that appear to have positively influenced the mental health of the population. Participation in meaningful activities has been crucial in the mental well-being perceived by the population, as well as resilience and having an outdoor space in the home. This information can be valu-

able at the public health level to generate mental health programmes that allow the population to improve their subjective well-being in the face of future (although unwanted) global crises, such as that caused by COVID-19.

## References

- Aerts, R., Vanlessen, N., & Honnay, O. (2021). Exposure to green spaces may strengthen resilience and support mental health in the face of the covid-19 pandemic. *BMJ (Clinical Research Ed.)*, *373*, n1601. <https://doi.org/10.1136/bmj.n1601>
- Barzilay, R., Moore, T. M., Greenberg, D. M., DiDomenico, G. E., Brown, L. A., White, L. K., Gur, R. C., & Gur, R. E. (2020). Resilience, COVID-19-related stress, anxiety and depression during the pandemic in a large population enriched for healthcare providers. *Translational Psychiatry*, *10*(1), 1–8. <https://doi.org/10.1038/s41398-020-00982-4>
- Benke, C., Autenrieth, L. K., Asselmann, E., & Pané-Farré, C. A. (2020). Lockdown, quarantine measures, and social distancing: Associations with depression, anxiety and distress at the beginning of the COVID-19 pandemic among adults from Germany. *Psychiatry Research*, *293*, 113462. <https://doi.org/10.1016/j.psychres.2020.113462>
- Bjorkedal, S. T. B., Bejerholm, U., Eplöv, L. F., & Möller, T. (2020). Meaningful Activities and Recovery (MA&R): The effect of a novel rehabilitation intervention among persons with psychiatric disabilities on activity engagement—study protocol for a randomized controlled trial. *Trials*, *21*(1), 789. <https://doi.org/10.1186/s13063-020-04722-3>
- Bjorkedal, S. T. B., Torsting, A. M. B., & Möller, T. (2016). Rewarding yet demanding: Client perspectives on enabling occupations during early stages of recovery from schizophrenia. *Scandinavian Journal of Occupational Therapy*, *23*(2), 97–106. <https://doi.org/10.3109/11038128.2015.1082624>
- Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the Connor-Davidson Resilience Scale (CD-RISC): Validation of a 10-item measure of resilience. *Journal of Traumatic Stress*, *20*(6), 1019–1028. <https://doi.org/10.1002/jts.20271>
- Cartwright, B. D. S., White, M. P., & Clitherow, T. J. (2018). Nearby Nature ‘Buffers’ the Effect of Low Social Connectedness on Adult Subjective Wellbeing over the Last 7 Days. *International Journal of Environmental Research and Public Health*, *15*(6), E1238. <https://doi.org/10.3390/ijerph15061238>
- Chen, L.-K. (2020). From meaningful activities to valued activities. *Archives of Gerontology and Geriatrics*, *90*, 104182. <https://doi.org/10.1016/j.archger.2020.104182>
- Chen, S., & Bonanno, G. A. (2020). Psychological Adjustment During the Global Outbreak of COVID-19: A Resilience Perspective. *Psychological Trauma-Theory Research Practice and Policy*, *12*, S51–S54. <https://doi.org/10.1037/tra0000685>
- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, *18*(2), 76–82. <https://doi.org/10.1002/da.10113>
- Cruyt, E., De Vriendt, P., De Letter, M., Vlerick, P., Calders, P., De Pauw, R., Oostra, K., Rodríguez-Bailón, M., Szmalec, A., Merchán-Baeza, J. A., Fernández-Solano, A. J., Vidaña-Moya, L., & Van de Velde, D. (2021). Meaningful activities during COVID-19 lockdown and association with mental health in Belgian adults. *BMC Public Health*, *21*(1), 622. <https://doi.org/10.1186/s12889-021-10673-4>
- Dzhambov, A. M., Lercher, P., Browning, M. H. E. M., Stoyanov, D., Petrova, N., Novakov, S., & Dimitrova, D. D. (2021). Does greenery experienced indoors and outdoors provide an escape and support mental health during the COVID-19 quarantine? *Environmental Research*, *196*, 110420. <https://doi.org/10.1016/j.envres.2020.110420>
- Eakman, A. M. (2014). A Prospective Longitudinal Study Testing Relationships Between Meaningful Activities, Basic Psychological Needs Fulfillment, and Meaning in Life. *OTJR: Occupation, Participation, Health*, *34*(2), 93–105. <https://doi.org/10.3928/15394492-20140211-01>
- Eakman, A. M. (2011). Convergent Validity of the Engagement in Meaningful Activities Survey in a College Sample. *OTJR-Occupation Participation and Health*, *31*(1), 23–32. <https://doi.org/10.3928/15394492-20100122-02>
- Eakman, A. M. (2012). Measurement Characteristics of the Engagement in Meaningful Activities Survey in an Age-Diverse Sample. *American Journal of Occupational Therapy*, *66*(2), e20–e29. <https://doi.org/10.5014/ajot.2012.001867>
- Eakman, A. M. (2013). Relationships Between Meaningful Activity, Basic Psychological Needs, and Meaning in Life: Test of the Meaningful Activity and Life Meaning Model. *OTJR: Occupation, Participation, Health*, *33*(2), 100–109. <https://doi.org/10.3928/15394492-20130222-02>
- Eakman, A. M., Carlson, M. E., & Clark, F. A. (2010). The meaningful activity participation assessment: A measure of engagement in personally valued activities. *The International Journal of Aging and Human Development*, *70*(4), 299–317.
- Eklund, M., & Brunt, D. (2020). Development of 7-Item Perceived Meaning of Activity in Housing (PMA-H-7) to Assess Opportunities for Meaningful Activities in the Supported Housing Context for People With Psychiatric Disabilities. *Evaluation & the Health Professions*, *43*(4), 230–234. <https://doi.org/10.1177/0163278719845036>
- Esakandari, H., Nabi-Afjadi, M., Fakkari-Afjadi, J., Farahmandian, N., Miresmaeili, S.-M., & Bahreini, E. (2020). A comprehensive review of COVID-19 characteristics. *Biological Procedures Online*, *22*, 19. <https://doi.org/10.1186/s12575-020-00128-2>
- Evans, S., Alkan, E., Bhango, J. K., Tenenbaum, H., & Ng-Knight, T. (2021). Effects of the COVID-19 lockdown on mental health, wellbeing, sleep, and alcohol use in a UK student sample. *Psychiatry Research*, *298*, 113819. <https://doi.org/10.1016/j.psychres.2021.113819>
- Every-Palmer, S., Jenkins, M., Gendall, P., Hoek, J., Beaglehole, B., Bell, C., Williman, J., Rapsey, C., & Stanley, J. (2020). Psychological distress, anxiety, family violence, suicidality, and wellbeing in New Zealand during the COVID-19 lockdown: A cross-sectional study. *PLoS One*, *15*(11), e0241658. <https://doi.org/10.1371/journal.pone.0241658>
- Fernández-Solano, A. J., Merchán-Baeza, J. A., Rodríguez-Bailón, M., & Eakman, A. (2022). Translation and Cultural Adaptation into Spanish of the Engagement in Meaningful Activities Survey. *Occupational Therapy International*, *2022*, e4492582. <https://doi.org/10.1155/2022/4492582>
- García-León, M.-Á., González-Gómez, A., Robles-Ortega, H., Padilla, J.-L., & Peralta-Ramírez, M.-I. (2019). Psychometric properties of the Connor-Davidson Resilience Scale (CD-RISC) in the Spanish population. *Anales de Psicología*, *35*(1), 33–40. <https://doi.org/10.6018/analesps.35.1.314111>
- Gismero-González, E., Bermejo-Toro, L., Cagigal, V., Roldán, A., Martínez-Beltrán, M. J., & Halty, L. (2020). Emotional Impact of COVID-19 Lockdown Among the Spanish Population. *Frontiers in Psychology*, *11*. <https://doi.org/10.3389/fpsyg.2020.616978>
- Göl, İ., & Erkin, Ö. (2021). Mental status of nursing students assessed using the general health questionnaire during the COVID-19 pandemic in Turkey. *Perspectives in Psychiatric Care*, *57*(4), 1712–1718. <https://doi.org/10.1111/ppc.12740>
- Goldberg, B., Brintnell, E. S., & Goldberg, J. (2002). The Relationship Between Engagement in Meaningful Activities and Quality of Life in Persons Disabled by Mental Illness. *Occupational Therapy in Mental Health*, *18*(2), 17–44. [https://doi.org/10.1300/J004v18n02\\_03](https://doi.org/10.1300/J004v18n02_03)
- Goldberg, D. P., Gater, R., Sartorius, N., Ustun, T. B., Piccinelli, M., Gureje, O., & Rutter, C. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, *27*(1), 191–197. <https://doi.org/10.1017/s0033291796004242>
- Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine*, *9*(1), 139–145. <https://doi.org/10.1017/s0033291700021644>
- Han, A., Radel, J., McDowd, J. M., & Sabata, D. (2016). Perspectives of People with Dementia About Meaningful Activities: A Synthesis.

- American Journal of Alzheimer's Disease and Other Dementias*, 31(2), 115-123. <https://doi.org/10.1177/1533317515598857>
- Hernández-López, M., Cepeda-Benito, A., Díaz-Pavón, P., & Rodríguez-Valverde, M. (2021). Psychological inflexibility and mental health symptoms during the COVID-19 lockdown in Spain: A longitudinal study. *Journal of Contextual Behavioral Science*, 19, 42-49. <https://doi.org/10.1016/j.jcbs.2020.12.002>
- Holt-Lunstad, J., Birmingham, W., & Jones, B. Q. (2008). Is there something unique about marriage? The relative impact of marital status, relationship quality, and network social support on ambulatory blood pressure and mental health. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, 35(2), 239-244. <https://doi.org/10.1007/s12160-008-9018-y>
- Hooker, S. A., Masters, K. S., Vagnini, K. M., & Rush, C. L. (2020). Engaging in personally meaningful activities is associated with meaning salience and psychological well-being. *Journal of Positive Psychology*, 15(6), 821-831. <https://doi.org/10.1080/17439760.2019.1651895>
- Horesh, D., Kapel Lev-Ari, R., & Hasson-Ohayon, I. (2020). Risk factors for psychological distress during the COVID-19 pandemic in Israel: Loneliness, age, gender, and health status play an important role. *British Journal of Health Psychology*, 25(4), 925-933. <https://doi.org/10.1111/bjhp.12455>
- Jacques-Aviñó, C., López-Jiménez, T., Medina-Perucha, L., de Bont, J., Gonçalves, A. Q., Duarte-Salles, T., & Berenguera, A. (2020). Gender-based approach on the social impact and mental health in Spain during COVID-19 lockdown: A cross-sectional study. *BMJ Open*, 10(11), e044617. <https://doi.org/10.1136/bmjopen-2020-044617>
- Kondo, N., Kazama, M., Suzuki, K., & Yamagata, Z. (2008). Impact of mental health on daily living activities of Japanese elderly. *Preventive Medicine*, 46(5), 457-462. <https://doi.org/10.1016/j.ypmed.2007.12.007>
- Lacroix, P.-A., Pelletier, A.-J., Blondin, M.-P., Dugal, A., Langlois, C., Levasseur, M., & Larivière, N. (2018). Traduction et validation du Questionnaire sur l'engagement dans les activités significatives: Translation and validation of the Engagement in Meaningful Activities Survey. *Canadian Journal of Occupational Therapy*, 85(1), 11-20. <https://doi.org/10.1177/0008417417702925>
- Lechien, J. R., Chiesa-Estomba, C. M., De Siati, D. R., Horoi, M., Le Bon, S. D., Rodríguez, A., Dequanter, D., Blecic, S., El Afia, F., Distinguin, L., Chekkoury-Idrissi, Y., Hans, S., Delgado, I. L., Calvo-Henriquez, C., Lavigne, P., Falanga, C., Barillari, M. R., Cammaroto, G., Khalife, M., ... Saussez, S. (2020). Olfactory and gustatory dysfunctions as a clinical presentation of mild-to-moderate forms of the coronavirus disease (COVID-19): A multicenter European study. *European Archives of Otorhinolaryngology: Official Journal of the European Federation of Otorhinolaryngological Societies (EUFOS): Affiliated with the German Society for Otorhinolaryngology - Head and Neck Surgery*, 277(8), 2251-2261. <https://doi.org/10.1007/s00405-020-05965-1>
- Long, C., McLean, A., Boothby, A.J.Hollin, C. (2008) Factors associated with quality of life in a cohort of forensic psychiatric inpatients. *The British Journal of Forensic Practice*, 13(3): 205-212.
- Liu, M., Prestigiacomo, C. J., Plawecski, M. H., & Cyders, M. A. (2020). Correspondence on gender disparities in the initial psychological impact of the U.S. COVID-19 pandemic. *Psychiatry Research*, 293, 113469. <https://doi.org/10.1016/j.psychres.2020.113469>
- Ma, Z.-R., Ma, W.-H., Idris, S., Pan, Q.-W., & Baloch, Z. (2021). COVID-19 impact on high school student's education and mental health: A cohort survey in China. *World Journal of Psychiatry*, 11(6), 232-241. <https://doi.org/10.5498/wjp.v11.i6.232>
- Mullol, J., Alobid, I., Mariño-Sánchez, F., Izquierdo-Domínguez, A., Marin, C., Klimek, L., Wang, D.-Y., & Liu, Z. (2020). The Loss of Smell and Taste in the COVID-19 Outbreak: A Tale of Many Countries. *Current Allergy and Asthma Reports*, 20(10), 61. <https://doi.org/10.1007/s11882-020-00961-1>
- National Guideline Alliance (UK). (2020). *Interventions to improve activities of daily living: Rehabilitation in adults with complex psychosis and related severe mental health conditions: Evidence review K*. National Institute for Health and Care Excellence (UK). <http://www.ncbi.nlm.nih.gov/books/NBK562539/>
- Notario-Pacheco, B., Solera-Martínez, M., Serrano-Parra, M. D., Bartolomé-Gutiérrez, R., García-Campayo, J., & Martínez-Vizcaíno, V. (2011). Reliability and validity of the Spanish version of the 10-item Connor-Davidson Resilience Scale (10-item CD-RISC) in young adults. *Health and Quality of Life Outcomes*, 9, 63. <https://doi.org/10.1186/1477-7525-9-63>
- OMS. (2001). *International Classification of Functioning, Disability and Health (ICF)*. [http://www.who.int/classifications/icf/icf\\_more/en/](http://www.who.int/classifications/icf/icf_more/en/)
- Panda, P. K., Gupta, J., Chowdhury, S. R., Kumar, R., Meena, A. K., Madaan, P., Sharawat, I. K., & Gulati, S. (2021). Psychological and Behavioral Impact of Lockdown and Quarantine Measures for COVID-19 Pandemic on Children, Adolescents and Caregivers: A Systematic Review and Meta-Analysis. *Journal of Tropical Pediatrics*, 67(1). <https://doi.org/10.1093/tropej/fmaa122>
- Pandey, D., Bansal, S., Goyal, S., Garg, A., Sethi, N., Pothiyill, D. I., Sreelakshmi, E. S., Sayyad, M. G., & Sethi, R. (2020). Psychological impact of mass quarantine on population during pandemics-The COVID-19 Lock-Down (COLD) study. *PLoS One*, 15(10), e0240501. <https://doi.org/10.1371/journal.pone.0240501>
- Passavanti, M., Argentieri, A., Barbieri, D. M., Lou, B., Wijayaratna, K., Foroutan Mirhosseini, A. S., Wang, F., Naseri, S., Qamhia, I., Tangerås, M., Pelliciani, M., & Ho, C.-H. (2021). The psychological impact of COVID-19 and restrictive measures in the world. *Journal of Affective Disorders*, 283, 36-51. <https://doi.org/10.1016/j.jad.2021.01.020>
- Pérez, L. M., Castellano-Tejedor, C., Cesari, M., Soto-Bagaria, L., Ars, J., Zambom-Ferraresi, F., Baró, S., Díaz-Gallego, F., Vilaró, J., Enfedaque, M. B., Espi-Valbé, P., & Inzitari, M. (2021). Depressive Symptoms, Fatigue and Social Relationships Influenced Physical Activity in Frail Older Community-Dwellers during the Spanish Lockdown due to the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 18(2). <https://doi.org/10.3390/ijerph18020808>
- Petruseviciene, D., Surmaitiene, D., Baltaduoniene, D., & Lendraitiene, E. (2018). Effect of Community-Based Occupational Therapy on Health-Related Quality of Life and Engagement in Meaningful Activities of Women with Breast Cancer. *Occupational Therapy International*, 2018, 6798697. <https://doi.org/10.1155/2018/6798697>
- Planchuelo-Gómez, Á., Odriozola-González, P., Iurtia, M. J., & de Luis-García, R. (2020). Longitudinal evaluation of the psychological impact of the COVID-19 crisis in Spain. *Journal of Affective Disorders*, 277, 842-849. <https://doi.org/10.1016/j.jad.2020.09.018>
- Plow, M. A., Finlayson, M., Gunzler, D., & Heinemann, A. W. (2015). Correlates of participation in meaningful activities among people with multiple sclerosis. *Journal of Rehabilitation Medicine*, 47(6), 538-545. <https://doi.org/10.2340/16501977-1948>
- Posel, D., Oyenu, A., & Kollamparambil, U. (2021). Job loss and mental health during the COVID-19 lockdown: Evidence from South Africa. *PLoS One*, 16(3), e0249352. <https://doi.org/10.1371/journal.pone.0249352>
- Pouso, S., Borja, Á., Fleming, L. E., Gómez-Baggethun, E., White, M. P., & Uyarra, M. C. (2021). Contact with blue-green spaces during the COVID-19 pandemic lockdown beneficial for mental health. *The Science of the Total Environment*, 756, 143984. <https://doi.org/10.1016/j.scitotenv.2020.143984>
- Prat, G., Ribot, A., Recoder, S., & Muñoz, F. (2019). Psychometric properties of the Spanish version of the Engagement in Meaningful Activities Survey in people with serious mental illness. *British Journal of Occupational Therapy*, 82(12), 743-749. <https://doi.org/10.1177/0308022619856557>
- Reed, K. D., Hocking, C. S., & Smythe, L. A. (2011). Exploring the meaning of occupation: The case for phenomenology. *Canadian Journal of Occupational Therapy. Revue Canadienne D'ergotherapie*, 78(5), 303-310. <https://doi.org/10.2182/cjot.2011.78.5.5>
- Ren, H., He, X., Bian, X., Shang, X., & Liu, J. (2021). The Protective Roles of Exercise and Maintenance of Daily Living Routines for Chinese Adolescents During the COVID-19 Quarantine Period. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, 68(1), 35-42. <https://doi.org/10.1016/j.jadohealth.2020.09.026>
- Sánchez-López, M. del P., & Dresch, V. (2008). The 12-Item General Health Questionnaire (GHQ-12): Reliability, external validity and factor structure in the Spanish population. *Psicothema*, 20(4), 839-843.
- Scarpelli, S., Alfonsi, V., Mangiaruga, A., Musetti, A., Quattropiani, M. C., Lenzo, V., Freda, M. F., Lemmo, D., Vegni, E., Borghi, L., Saita, E., Cattivelli, R., Castelnuovo, G., Plazzi, G., De Gennaro, L., & Frances-

- chini, C. (2021). Pandemic nightmares: Effects on dream activity of the COVID-19 lockdown in Italy. *Journal of Sleep Research*, e13300. <https://doi.org/10.1111/jsr.13300>
- Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C., & Yehuda, R. (2014). Resilience definitions, theory, and challenges: Interdisciplinary perspectives. *European Journal of Psychotraumatology*, 5. <https://doi.org/10.3402/ejpt.v5.25338>
- Steger, M. F., Kashdan, T. B., & Oishi, S. (2008). Being good by doing good: Daily eudaimonic activity and well-being. *Journal of Research in Personality*, 42(1), 22–42. <https://doi.org/10.1016/j.jrp.2007.03.004>
- von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., Vandenbroucke, J. P., & STROBE Initiative. (2008). The Strengthening of Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *Journal of Clinical Epidemiology*, 61(4), 344–349. <https://doi.org/10.1016/j.jclinepi.2007.11.008>
- White, M. P., Elliott, L. R., Gascon, M., Roberts, B., & Fleming, L. E. (2020). Blue space, health and well-being: A narrative overview and synthesis of potential benefits. *Environmental Research*, 191, 110169. <https://doi.org/10.1016/j.envres.2020.110169>
- Whiteford, G. (2000). Occupational Deprivation: Global Challenge in the New Millennium. *British Journal of Occupational Therapy*, 63(5). <https://journals.sagepub.com/doi/10.1177/030802260006300503>
- Yaya, S., Idriss-Wheeler, D., Sanogo, N. A., Vezina, M., & Bishwajit, G. (2020). Self-reported activities of daily living, health and quality of life among older adults in South Africa and Uganda: A cross sectional study. *BMC Geriatrics*, 20(1), 402. <https://doi.org/10.1186/s12877-020-01809-z>