THE ASSOCIATION OF GRIEF WITH MENTAL HEALTH AND THE ROLE OF LONELINESS DURING THE COVID-19 PANDEMIC

LA INFLUENCIA DEL DUELO EN LA SALUD MENTAL DURANTE LA PANDEMIA DE COVID-19: EL PAPEL DE LA SOLEDAD

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Abstract

Previous research found that bereavement is associated with several pathological responses affecting both physical and mental health. During the COVID-19 pandemic, and the socially disruptive measures implemented, losses of close contacts have occurred under exceptional circumstances, and it is reasonable to expect that many bereaved people would be unable to overcome their loss adaptively, resulting in dysfunctional grief leading to mental health alterations. Loneliness, which has increased during the pandemic, has been identified as a

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significant risk factor for mental health that is common when people grieve. In this study, we aimed to gauge the effects of the process of bereavement on mental health in the context of the COVID-19 pandemic and to explore the mediating role of loneliness on the relationship between grief and mental health alterations by surveying a representative sample of 2000 Spanish adults interviewed by phone during the pandemic (February-March 2021). Logistic regressions were performed to examine the effects of grief levels on depression, anxiety, panic attacks, post-traumatic stress disorder, substance abuse, and suicidal thoughts and behaviors. Our results confirmed that how the loss of a loved one is processed is associated with our mental health. Dysfunctional grief was significantly linked to all mental health conditions, particularly depression (OR = 14.28) and anxiety (OR = 11.61). As predicted, loneliness accounted for a substantial percentage (8-30 %) of the impact of dysfunctional grief on mental health outcomes. Our results suggest that in dealing with the mental health consequences of the COVID-19 pandemic, professionals should take into consideration the role of dysfunctional grief and loneliness as targets for assessment and intervention.

Keywords: COVID-19 pandemic; bereavement; dysfunctional grief; depression; anxiety; loneliness.

Resumen

Diversas investigaciones muestran que el proceso de duelo se asocia con una variedad de respuestas patológicas tanto a nivel mental como físico. Durante la pandemia de COVID-19 y las medidas restrictivas implementadas, se han producido pérdidas de personas cercanas en condiciones excepcionales. Es razonable pensar que muchas de las personas que estan en proceso de duelo no puedan superar su pérdida de una forma adaptativa, y que esto conlleve dificultades para procesar el duelo conducentes a alteraciones de su salud mental. La soledad, que se incrementó durante la pandemia, se ha identificado com un factor de riesgo significativo para la salud mental que resulta común para las personas que están en duelo. En este estudio, nos propusimos estimar los efectos del proceso de duelo en la salud mental en el contexto de la pandemia de COVID-19 y explorar el posible papel mediador de la soledad en la relación entre duelo y salud mental. Para ello, se realizaron encuestas en una muestra española representativa de 2000 personas adultas entrevistadas por teléfono durante la pandemia (febrero-marzo de 2021). Con estos datos, se realizaron regresiones logísticas para examinar los efectos del duelo en la depresión, ansiedad, ataques de pánico, estrés postraumático, abuso de substancias, y pensamientos y conductas suicidas. Nuestros resultados confirmaron que la forma en la que se procesa la pérdida de un ser querido influye en la salud mental de las personas. Las dificultades para elaborar el duelo resultaron asociadas de forma más significativa a la depresión (OR = 14.28) y ansiedad (OR = 11.61). Según se había previsto, la soledad explicó un porcentaje substancial (8-30 %) del impacto del duelo disfuncional en los indicadores de salud mental. Nuestros resultados sugieren que, a la hora de abordar las consecuencias en la salud mental de la pandemia de COVID-19, los profesionales deberían considerar el papel del duelo y la soledad como objetos de evaluación y tratamiento.

Palabras clave: pandemia de COVID-19; duelo disfuncional; luto; depresión; ansiedad; soledad.

Introduction

The coronavirus (SARS-CoV-2) that emerged from Wuhan, China, at the end of 2019 quickly spread worldwide, becoming a global pandemic and a public health emergency within 4 months (Lee & Neimeyer, 2020). After about three years, there have been more than 700 million cases diagnosed and the coronavirus disease (COVID-19) has claimed nearly seven million lives worldwide (WHO, 2022). There has also been an increase in death rates from other causes during the pandemic, sometimes attributed to treatment for other life-threatening diseases being postponed or health care visits being avoided to prevent infection (Stroebe & Schut, 2021). As an illustration, during the week of April 5, 2020, indicators in Spain reached an excess mortality of 158 % (Ritchie et al., 2020), increasing the number of people suffering from grief. Given this high death tolls related to the pandemic, it is

Figure 1.

Reactions to bereavement

Affective	Cognitive
Depression, despair, dejection, distress Anxiety, fears, dreads Guilt, self-blame, self-accusation Anger, hostility, irritability Anhedonia (loss of pleasure) Loneliness Yearning, longing, pining Shock, numbness	Preoccupation with thoughts of deceased, intrusive ruminations Sense of presence of deceased Suppression, denial Lowered self-esteem Self-reproach Helplessness, hopelessness Suicidal ideation Sense of unreality Memory, concentration difficulties
Behavioral	**Physiological–somatic**
Agitation, tenseness, restlessness Inhibition, physical inactivity Overactivity Searching Weeping, sobbing, crying Social withdrawal	Loss of appetite Sleep disturbances Energy loss, exhaustion, fatigue Somatic complaints Physical complaints like deceased
Immunological and endocrine changes High susceptibility to illness, disease, mortality	

Note. Adapted from Stroebe et al. (2007)

unsurprising that bereavement has deeply affected survivors, relatives, and friends.

Daily statistics tend to focus on the deceased, with less attention paid to the bereaved. As reported by Lee and Neimeyer (2020), the dearth of scientific attention on this topic during this pandemic is surprising given that the death of a loved one is one of the most stressful life events (Hobson et al., 1998; Holmes & Rahe, 1967). What is more, bereavement is associated with an increased risk of mortality, including by suicide. People who have been bereaved are more likely to have physical health problems, particularly if they are recently bereaved, having higher rates of disability, medication use, and hospitalization than their non-bereaved peers (Stroebe et al., 2007). Bereavement may spark a number of pathological responses: leading to new onset or worsening of general medical conditions; precipitating, intensifying, or prolonging major depressive disorders; triggering mania, post-traumatic stress disorder, or anxiety disorders; and exacerbating problems with substance use and abuse (Keyes et al.,

2014; Zisook et al., 2014). Additionally, it is associated with an array of psychological symptoms (Stroebe et al., 2008; Parkes, 1996), as shown in Figure 1, that can complicate grief and interfere with the natural healing process (Shear & Skritskaya, 2012).

Grieving is a natural response to the loss of a loved one and is experienced repeatedly by most individuals during their lifetimes. For most bereaved, although the loss is distressing and disruptive, they ultimately come to terms with it over time (Zisook et al., 2014). By contrast, a group of bereaved (10 % after natural death and 50% after death due to unnatural causes) experience intense grief that persists longer than what would normally be expected (Djelantik et al., 2020), characterized by an enduring and overwhelming sense of yearning or preoccupation with the deceased and significant emotional suffering that causes functional impairment in daily life. This condition has been termed prolonged grief disorder (Prigerson et al., 2009; WHO, 2018), persistent complex bereavement disorder (APA, 2013), or complicated grief (Shear et al., 2011). Although

the criteria for each of these diagnostic labels vary in specific details (e.g., time after the loss) (Parro-Jiménez et al., 2021; Simon et al., 2020), it is expected that those who meet any diagnosis of dysfunctional bereavement will experience more intense and persistent sequelae.

The global COVID-19 pandemic is predicted to have a major impact on the experience of death, dying, and bereavement (Mayland et al., 2020). Research has established numerous evidence-based risk factors for clinical impairment due to prolonged and complicated grief, such as social isolation, unexpected death, challenges to a secure attachment relationship to the deceased, spiritual struggles during bereavement, inability to make sense of the loss, socioeconomic and educational disadvantage, and a lack of institutional and informational support in care facilities (Neimeyer & Burke, 2017). Significantly, each of these factors may be considered characteristic of the circumstances in which pandemic deaths have occurred.

Protective measures against contagion have required not only physical distancing but also emotional distancing. Some people have been denied the right to meet relatives who were hospitalized or staying in residential/care homes, and/or were unable to say goodbye before death. Some even went through the mourning process without a body. Many families were unable to hold funerals and burials or had to do it with a significant delay or with the limited-capacity gatherings permitted, making it difficult to achieve emotional closure. Almost every in-person social interaction was forbidden, and many people had to remain isolated or away from their social network, without the emotional support needed in situations of high vulnerability and hardship.

It is reasonable to expect that a considerable number of people will be unable to overcome loss adaptively during the pandemic. Consequently, they can develop psychopathological reactions and pain, including dysfunctional grief. Some authors have stated that researchers studying mental health in relation to the pandemic should include grief as a potential contributory factor (Bertuccio & Runion, 2020). Others propose that grieving has become another dimension in the present social context (Fernández & González-González, 2020). Breen et al.

(2021) suggests that the predicted worldwide tsunami of grief from this pandemic is likely to be associated with significant functional impairment, particularly for the bereaved who report symptoms of separation distress, dysfunctional grief, and post-traumatic stress.

When identifying factors that contributed to mental health during the lockdown for COVID-19 in Spain, Pinedo et al. (2021) concluded that loneliness was a particularly important risk factor. Several studies found a negative relationship between loneliness and both depression and anxiety during the lockdown (e.g., Palgi et al, 2020; Robb et al., 2020; van Tilburg et al., 2021). Loneliness is a major indicator of poor social well-being and it is expected when people grieve the loss of someone to whom they were closely attached. The classic study by Lund (1989) showed that most widowed persons mentioned loneliness as the biggest challenge to coping on a daily basis. The review by Vedder et al. (2021) supports the idea that loneliness has amplified bereavement during the COVID-19 pandemic. There is substantial evidence that loneliness plays a key role in adaptation to bereavement (e.g., Fried et al., 2015).

Based on literature stating the important impact of bereavement on behavioral (e.g., agitation, fatigue, and withdrawal), psychological (e.g., depression, loneliness, and suicidal ideation), and physical health (e.g., increased risks of heart attacks, illnesses, and mortality) (Stroebe et al., 2007), we aimed to gauge the effects of bereavement on mental health in the context of the COVID-19 pandemic. Given the importance of loneliness and given that this highly unpleasant state was often extended during the pandemic (Hoffart et al., 2020; Li & Wang, 2020), we also considered it important to explore its potential mediating role on the link between bereavement and mental health. We hypothesized that having lost a loved one during the COVID-19 pandemic, together with how this loss was processed (high levels of pandemic grief) is associated with the indicators of major depressive disorder (MDD), generalized anxiety disorder (GAD), post-traumatic stress disorder (PTSD), substance use disorder (SUD), panic attacks, and/or suicidal thoughts and behaviors (STB). Additionally, we hypothesized that loneliness could (partially) explain the observed relationships.

Method

Study Design

This is a cross-sectional study, and data come from the first follow-up assessment (February – March 2021) of participants from the MIND/COVID general population study (www.mindcovid.org). At baseline (June 2020), we obtained a nationally representative sample from the adult general population in Spain by simple random sampling after the first wave of the COVID-19 pandemic. Non-institutionalized Spanish adults (aged ≥ 18years) with access to a landline or mobile telephone who had no Spanish language barriers were eligible to participate. The sample was drawn through a dual-frame random digit dialing telephone survey, including both landlines and mobiles.

Participants

Participants of the baseline survey (N = 3,500) were invited to respond to a follow-up survey, of which 2,000 responded (RR = 57.14 %) and were subjects for this study.

Measurements

The primary measures were for indicators of MDD, GAD, PTSD, SUD, panic attacks, STB, and pandemic grief, with loneliness included as a secondary measure. We included sociodemographic and other covariates as well.

Major Depressive Disorder

Symptoms of depression were measured using the Spanish version of the 8-item Patient Health Questionnaire Depression Scale (PHQ-8) (Diez-Quevedo et al., 2001). The PHQ-8 total score ranges from 0 to 24, with a cut-off of ≥10 points indicating current MDD. Respondents were asked to rate how often they had been bothered by each item over the last 2 weeks, using a 4-point Likert-type scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). This tool shows high reliability ($\alpha > 0.8$) and good diagnostic accuracy (AUC > 0.90) for MDD (Wu et al., 2020).

Generalized Anxiety Disorder

The Spanish version of the 7-item Generalized Anxiety Disorder Scale (GAD-7) was used to measure anxiety symptoms (García-Campayo et al., 2009). The total score ranges from 0 to 21, and a cut-off of 10 indicates current GAD. Respondents were asked to rate the frequency of anxiety symptoms in the last 2 weeks on a 4-point Likert-type scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). This tool has a good performance to detect anxiety (AUC > 0.80; Newman et al., 2002).

Post-Traumatic Stress Disorder

The 4-item version of the PTSD checklist for DSM-5 (PCL-5) was used. This generates diagnoses that parallel those of the full PCL-5, which is a 20-item self-report measure developed by Weathers et al. (2013), making it suitable for screening (AUC > 0.90; Zuromski et al., 2019). Respondents were asked to rate how bothered they had been by each item in the past month, using a 5-point Likert-type scale (0 = Not at all, 1 = A little bit, 2 = Moderately, 3 = Quite a bit and 4 = Extremely). Items were summed to provide a total severity score (0 – 16). The Spanish version of the questionnaire was used with a cut-off of 7 indicating current PTSD (Resick et al., 2020).

Substance Use Disorder

Evaluated with the 4-item CAGE questionnaire (Cutting down, Annoyance with criticism, Guilty feeling, and Eye-openers) adapted to include drugs (CAGE-AID). This tool has proved useful in helping to diagnose alcoholism (Díez Martínez et al., 1991; Hinkin et al., 2001; Saitz et al., 1999) and SUD (López-Maya et al., 2012). Item responses on the CAGE-AID questionnaire are scored 0 (no) and 1 (yes), with higher scores indicating a worse alcohol and/or drug problem. The questionnaire was adapted into Spanish for the MIND/COVID wider study according to the World Health Organization (WHO) translation guidelines for assessment instruments (Üstun et al, 2005). This version showed acceptable internal consistency ($\alpha = 0.67$). A cut-

off points of 1 indicated current SUD (Mdege & Lang, 2011).

Panic Attacks

The number of panic attacks in the 30 days prior to interview was assessed with an item from the World Mental Health-International College Student (WMHICS) initiative (Blasco et al., 2016; Kessler et al., 2013). A dichotomous variable was created to indicate the presence (or not) of panic attacks.

Suicidal Thoughts and Behaviors

Assessed with a modified version of the Columbia Suicide Severity Rating Scale (C-SSRS; Posner et al., 2011), which has been adapted into Spanish (García-Nieto et al., 2013) and has shown a good ability to discriminate suicidal behavior (Ballester et al., 2019). It includes passive and active suicidal ideation as well as plans and attempts. An affirmative response to any of the six items on the scale was considered to indicate the presence of these thoughts and behaviors.

Pandemic Grief

This was evaluated with the Pandemic Grief Scale (PGS), a 5-item scale that measures grief during the COVID-19 pandemic across all demographic groups. It effectively discriminates between people with and without dysfunctional grief, using an optimized cut-off score of ≥ 7 (AUC > 0.8), and shows high reliability ($\alpha = 0.83$; Lee & Neimeyer, 2020). Using a 4-point scale, subjects rated how often in the last 2 weeks they experienced each symptom (0 = Not at all, 1 = Several days, 2 = More than half the days, 3 = Nearly every day). This scale was adapted into Spanish by our team using the recommended process for transcultural adaptation. This involved translation into Spanish by two Spanish-speaking translators, consensus translation by a third person, back translation by an English-speaking translator to identify problems, and final consensus translation and assessment of equivalence by the research team having the approval of the second author of the original English scale who is competent in Spanish. The internal consistency of the instrument was good in our sample ($\alpha = 0.72$). PGS scores of 0–1 was

categorized as "low" grief; scores of 2–6 as "moderate"; and scores of 7–15 as "dysfunctional." Only those who reported having lost someone close during the pandemic completed the PGS.

Loneliness

We assessed loneliness with the 3-item University of California, Los Angeles, Loneliness Scale (UCLA-LS) which has satisfactory reliability and both concurrent and discriminant validity (Hughes et al., 2004). Responses to the three items are scored 1–3, giving total sum score of 3–9. Higher scores indicate greater loneliness. The scale was adapted into Spanish for this study, following the World Health Organization (WHO) translation guidelines for assessment instruments (Üstun et al, 2005), and the final instrument had good internal consistency ($\alpha = 0.71$).

Covariates

Sociodemographic covariates included age (18–34, 35–49, 50–64, 65+ years), sex (male/female), marital status (never married, married or cohabiting, separated/divorced, or widowed), and educational level (primary, secondary low, secondary high, and tertiary). The existence of pre-pandemic lifetime mental disorders was assessed using a checklist based on the Composite International Diagnostic Interview (CIDI; Kessler & Üstün 2004) that screens for self-reported lifetime depressive, bipolar, anxiety, panic attacks, SUD, and "other" mental disorders. We assessed COVID-19 infection status by asking if the respondent had been hospitalized for COVID-19 infection and/or had a positive COVID-19 test or medical diagnosis not requiring hospitalization.

The Oslo Social Support Scale (OSSS-3) was used to assess social support. It contains three items ranging from 1 to 4 or 5, with the total sum score in the range of 3–14. Scores of 3–8, 9–11, and 12–14 were categorized as "poor," "moderate," and "strong," respectively (Kocalevent et al., 2018). This scale was also adapted into Spanish for the MIND/COVID wider study according to the World Health Organization (WHO) recommendations (Üstun et al, 2005), and the internal consistency in our sample was limited ($\alpha = 0.50$).

Procedure

Data Collection

First, a sample of mobile telephone numbers was generated through an automated system. Subsequently, landline numbers were selected from an internal database developed and maintained by the survey company to ensure that all geographical areas in Spain were represented in appropriate proportions. Up to seven calls were attempted to each number at different times of the day. The distribution of the interviews was planned according to quotas proportional to the Spanish population in terms of age, sex, and region. Professional interviewers from the survey company IPSOS carried out computer-assisted telephone interviews. Further details about sampling in the MIND/COVID project are reported elsewhere (Mortier et al., 2021).

Parc Sanitari Sant Joan de Déu (PIC 86-20) and Parc de Salut Mar (protocol 2020/9203/I) clinical research ethics committees granted ethical approval. After fully informing eligible participants about the study objectives and procedures, we sought oral consent for interview. Participants received no financial compensation.

Data Analysis Strategy

To compensate for non-responders, post-stratification weights data were applied to restore the distribution to that of the adult general population of Spain by age, sex, and region. Descriptive analyses are provided for the independent variable (i.e., pandemic grief), and the control variables (i.e., sex, age, marital status, education, social support, COVID-19 infection status, and pre-pandemic mental disorder) as weighted proportions and unweighted frequencies.

To examine the association of pandemic grief with mental disorders, several logistic regression models were constructed. We constructed unadjusted and adjusted models for each outcome: unadjusted models tested the associations of outcomes with variable of interest without control variables, whereas adjusted models included all control variables. Odds ratio and 95% confidence intervals are reported for all models. To clarify these effects, we then calculated the estimated probabilities for MDD, GAD, PTSD, SUD, panic attacks, and STB depending on pandemic grief using the margins command (Williams, 2012), based on the adjusted logistic regression models. Control variables were centered according to the real proportion.

To assess the mediating role of loneliness on the associations between pandemic grief and mental disorders (Figure 2), we performed mediational analysis using the *khb* command (Breen et al. 2013; Karlson & Holm 2011; Karlson et al. 2012). The independent variable (pandemic grief) was included as a continuous variable given that the detected relationships were linear. This method enables to

Figure 2.

Total and mediation models
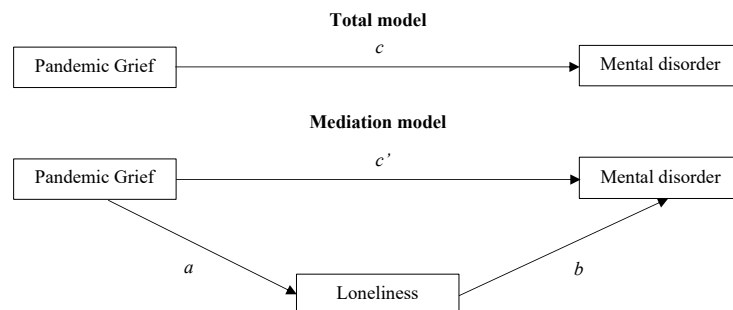
Note. A mediation model decomposes the total effect, *c*, into the indirect effect, *ab* (product of the indirect paths *a* and *b*) and the direct effect, *c'* (with the effect of the mediator removed). The total effect can be described as $c = c' + ab$, and hence the indirect effect as $ab = c - c'$.

decompose the total effect of a variable into direct and indirect (i.e., mediational) effects and to calculate the mediated percentage (i.e., the percentage of the main association explainable by the mediator).

All reported *p*-values were based on two-sided tests, with statistical significance set at $p < 0.05$. Stata version SE 14 (StataCorp, 2015) was used to analyze the survey data.

Results

In this study, 1,110 and 890 individuals identified themselves as men and women, respectively, with ages ranging from 18 to 90 years (mean age = 49.37 ± 0.33). Of these, 745 had suffered the loss of someone close to them during the pandemic (from March 2020) and completed the five PGS items to assess pandemic grief, in addition to the other measures.

Some variables received a lower number of responses due to missing values, with the highest number being 53 for the social support variable. Given that other affected variables had far fewer missing values, we decided against imputation for the missing data. Instead of removing those cases for all variables, we ran the analyses with the largest possible number of responses to keep the largest sample size. It is unlikely that this influenced the results

Table 1.

Characteristics of the sample of the study (N =2000)

	Freq.	%
Sex		
• Female	1110	51.50
Age (years)		
• 18–34	365	22.10
• 35–49	616	27.20
• 50–64	683	27.00
• 65+	336	23.70
Social support [a]		
• Strong	873	44.58
• Moderate	883	45.69
• Poor	191	9.73
Marital status		
• Never married / Single	662	35.12
• Married	1079	51.57
• Divorced / separated	165	7.35
• Widowed	94	5.96
Education		
• Primary	115	6.62
• Secondary low	620	30.78
• Secondary high	379	18.44
• Tertiary	886	44.16
COVID-19 infection status (tested positive or diagnosed)	57	2.70
Pre-pandemic mental disorder	697	34.06
Grief (PGS)		
• No Loss	1.255	62.94
• Low	619	30.90
• Moderate	111	5.49
• Dysfunctional	15	0.67

Note. Unweighted frequencies (Freq.) and weighted proportions (%) of mental disorders and control variables are displayed. Some variables have a lower number of responses due to lost values.

Table 2.

Odds Ratio [95% confident interval] resulting from the unadjusted Logistic Regression Models of factors related to Mental Health Conditions.

	Major depressive disorder	Generalized anxiety disorder	Post-traumatic stress disorder	Substance use disorder	Panic attacks	Suicidal thoughts and behaviors
Grief (PGS)						
No Loss	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Low	0.96 [0.70, 1.31]	0.67 [0.48, 0.94] *	0.79 [0.57, 1.10]	0.84 [0.53, 1.32]	0.85 [0.59, 1.21]	1.65 [0.97, 2.80]
Moderate	5.41 [3.46, 8.46] ***	3.38 [2.14, 5.34] ***	3.02 [1.89, 4.85] ***	2.02 [1.06, 3.83] *	3.21 [1.91, 5.40] ***	5.09 [2.49, 10.40] ***
Dysfunctional	20.82 [6.34, 68.28] ***	13.56 [4.34, 42.35] ***	6.84 [2.39, 19.58] ***	2.05 [0.45, 9.39]	17.93 [5.75, 55.92] ***	8.16 [2.16, 30.79] **

Note. Odds Ratio with 95% confidence interval are displayed. Ref = Category of reference. *p < .05, **p < .01, ***p < .001.

significantly since we did not find statistically significant sociodemographic differences comparing people with and without missing values. We present the sociodemographic characteristics of the sample in Table 1.

Overall, 51.50 % identified as women and distribution was even among the established age groups. About a tenth of the sample reported having poor social support, while around 45 % reported moderate or strong social support. At the time of assessment, half the sample were married and about a third were single. In terms of education, the largest group were those with a tertiary education level. Less than 3 % of participants reported having been hospitalized for COVID-19 and/or having had a positive

COVID-19 test or medical diagnosis not requiring hospitalization. Approximately one-third reported having suffered from a mental disorder prior to the pandemic.

To keep working with the full sample and to include data from participants who reported no bereavement during the pandemic, we included a "no loss" reference category for the pandemic grief variable, which included most respondents. Among those who suffered a close bereavement during the pandemic, most reported low-level grief while only 15 reported dysfunctional grief (0.67 %). Tables 2 and 3 show the unadjusted and adjusted logistic regression models, respectively, of the association between pandemic grief levels with the six mental health conditions. Adjusted variables were sex, age, social

Table 3.

Odds ratio [95% confident interval] resulting from the adjusted logistic regression models of factors related to mental health conditions.

	Major depressive disorder	Generalized anxiety disorder	Post-traumatic stress disorder	Substance use disorder	Panic attacks	Suicidal thoughts and behaviors
Grief (PGS)						
No Loss	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Low	1.10 [0.80, 1.54]	0.75 [0.52, 1.08]	0.82 [0.58, 1.17]	0.92 [0.56, 1.51]	0.99 [0.68, 1.44]	1.94 [1.10, 3.43] *
Moderate	4.29 [2.60, 7.07] ***	2.75 [1.67, 4.53] ***	2.50 [1.50, 4.15] ***	2.01 [1.04, 3.87] *	2.42 [1.31, 4.47] **	3.50 [1.64, 7.46] **
Dysfunctional	14.28 [3.94, 51.72] ***	11.61 [3.60, 37.40] ***	6.36 [1.97, 20.60] **	1.89 [0.30, 11.79]	14.86 [5.05, 16.88] ***	6.04 [1.41, 25.90] *

Note. Models mutually adjusted for sex, age, social support, marital status, educational level, COVID-19 infection status, and pre-pandemic mental disorder. Ref = Category of reference. *p < .05, **p < .01, ***p < .001.

Figure 3.

Predicted probabilities with 95% confidence intervals for Mental Disorders.
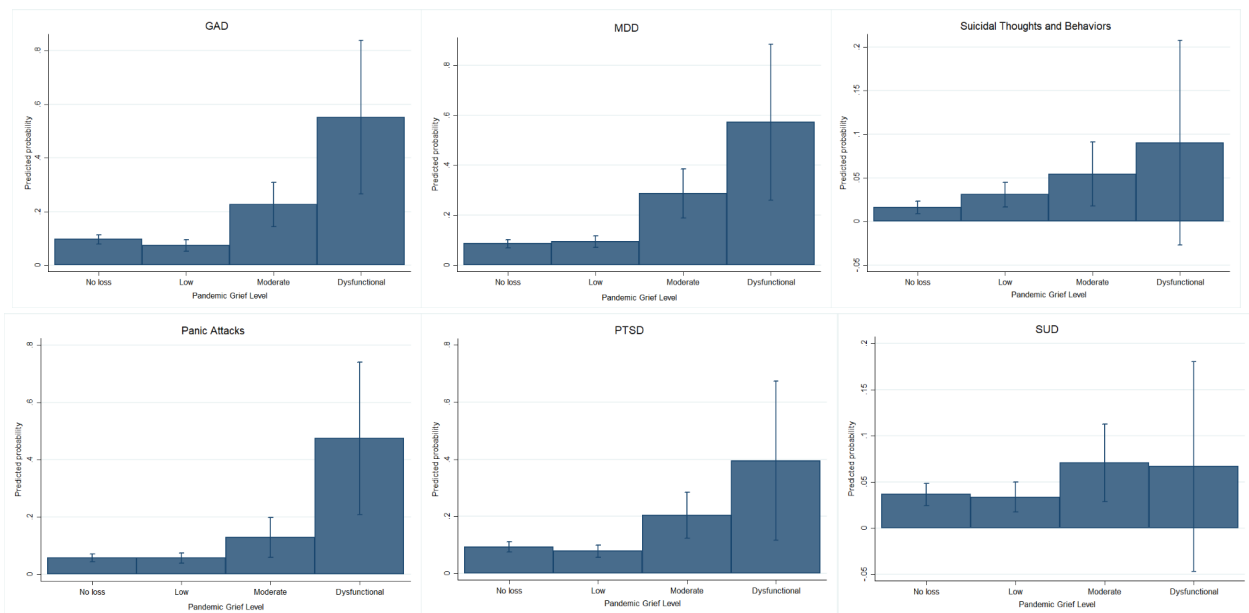
Note. All predictions were adjusted for sex, age, social support, marital status, educational level, COVID-19 infection status, and pre-pandemic mental disorder.

support, marital status, educational level, COVID-19 infection status, and pre-pandemic mental disorder.

Compared to those who had suffered no losses, those affected by moderate and dysfunctional grief had higher odds of MDD, GAD, PTSD, panic attacks, and STB. For SUD, results were significant only for moderate grief. These greater risks in cases of moderate grief (vs. no loss) were around 2–2.5 times that of developing GAD, PTSD, SUD, or panic attacks, reaching 3.50 time for STB and 4.29 times for MDD. Values for comparisons between the dysfunctional bereavement group and those who with no losses were even more drastic, seeing approximate 6-fold increased risks of PTSD and STB, 11.6-fold increased risks of GAD, and 14- to 15-fold increased risks of MDD and panic attacks. Statically significant differences were also found for low grief levels (vs. no loss) and STB, for which risk was increased.

The estimated probabilities for each mental disorder depending on pandemic grief levels are represented in Figure 3. Compared with non-bereaved individuals, risk of a disorder increased with increasing PGS score from low to dysfunctional grief, as follows: from 0.09 (95%CI: 0.07, 0.10) to 0.57 (95%CI: 0.26, 0.88) for MDD, from 0.10 (95%CI: 0.08, 0.11) to 0.55 (95%CI: 0.27, 0.84) for GAD, from 0.09 (95%CI: 0.08, 0.11) to 0.39 (95%CI: 0.11, 0.67) for PTSD, from 0.04 (95%CI: 0.02, 0.05) to 0.06 (95%CI: -0.05, 0.18) for SUD, from 0.06 (95%CI: 0.04, 0.07) to 0.48 (95%CI: 0.21, 0.74) for panic attacks, and from 0.02 (95%CI: 0.01, 0.02) to 0.09 (95%CI: -0.03, 0.2) for STB.

Finally, the results of the mediation analyses are shown in Table 4. The association between pandemic grief and mental disorders was mediated by loneliness in percentages ranging from 8% to 30%, with PTSD yielding the highest percentage. This indicates that loneliness was a noticeable path through which pandemic grief affected the emergence of PTSD and other disorders.

Table 4.

Logistic Regression Analyses of the Association of PGS score with Mental Health Conditions with Loneliness as a Mediator.

Dependent variables:	Independent variable: PGS score	% Mediated Loneliness
MDD		
Total	1.90 [1.52, 2.37] ***	
Direct	1.70 [1.36, 2.11] ***	
Indirect	1.12 [1.05, 1.19] ***	17.47
GAD		
Total	1.46 [1.17, 1.83] **	
Direct	1.35 [1.08, 1.69] *	
Indirect	1.08 [1.03, 1.13] **	20.93
PTSD		
Total	1.38 [1.10, 1.73] **	
Direct	1.25 [0.99, 1.57]	
Indirect	1.10 [1.04, 1.17] **	30.28
SUD		
Total	1.19 [0.89, 1.60]	
Direct	-	
Indirect	-	-
Panic Attacks		
Total	1.58 [1.24, 2.01] ***	
Direct	1.48 [1.16, 1.89] **	
Indirect	1.06 [1.02, 1.11] **	13.30
Suicidal Thoughts		
Total	1.81 [1.34, 2.44] ***	
Direct	1.72 [1.28, 2.32] ***	
Indirect	1.05 [1.01, 1.09] *	8.11

Note. Odds Ratio with [95% confidence interval] are displayed. For the mediation analysis, the independent variable (PGS) was introduced as continuous. All models were adjusted for sex, age, social support, marital status, educational level, COVID infection status, and pre-pandemic mental disorder. Mediation effect is not provided when the total association was not significant. Percentage mediated is considered statistically significant (*) when indirect effect is $*p < .05$; $**p < .01$; $***p < .001$.

Discussion

The COVID-19 pandemic has claimed many lives and left even more people grieving. Considering the exceptional circumstances in which this bereavement has been processed and the impact that grief can have on general health, our team set out to analyze the association between pandemic grief levels and a range of mental health conditions.

The effects of moderate and dysfunctional grief on mental health were significant in the current research. The bereaved showed an increased risk of depression that was 4–14 times greater than for those not bereaved. If a participant had dysfunctional grief, their risk of panic attacks was 15 times greater, the risk of GAD was > 11 times greater, and the risk of PTSD was > 6 times greater when compared with non-bereaved individuals.

Our results are consistent with those of studies showing that a high level of grief symptomatology predicts the onset of depression (Camacho, 2013). They are also related to previous literature reporting depressive symptoms in bereaved populations (Parkes, 1996), in which 25%–45% of participants had subclinical depressive symptoms and 10%–20% had clinical depression

(Hansson & Stroebe, 2003; Stroebe et al., 2007). Some studies suggest that there is an elevated risk of both anxiety disorders (e.g., GAD and panic) and PTSD after the stress of bereavement (Hagengimana et al., 2003; Jacobs et al., 1990; Keyes et al., 2014; Shear & Skritskaya, 2012), indicating that these disorders are more prevalent in the bereaved population than in the general population (Zisook et al., 2014). Additionally, several studies have examined their association with complicated grief, confirming the high rates of anxiety disorders and PTSD in individuals with complicated grief, both before and after the loss (Jacobs et al., 1990; Simon et al., 2007). People who have PTSD with or without an anxiety disorder, together with complicated grief, report much worse grief symptomatology and impairment than those with complicated grief alone (Marques et al., 2013; Pini et al., 2012; Simon et al., 2007). Different authors state that these comorbidities may be due shared symptomatology between complicated grief and anxiety, depression, or stress-related disorders, including avoidance, intolerance of uncertainty, rumination, and hyper-arousal (Boelen, 2010; Parro-Jiménez et al., 2021; Schaal et al., 2012; Shear et al., 2011). Our results strengthen the reported relationships between intense grief and these mental health disorders.

Although there was a relationship between SUD and grief in this study, it was not consistent. However, it is worth mentioning that a tendency was observed that suggests this topic should be considered for further investigation, especially if one also considers the biological plausibility. Parisi et al. (2019) reported preliminary evidence of a positive relationship between complicated grief and substance misuse. Studies included in their review indicated that individuals with either complicated grief or substance misuse are vulnerable to the subsequent development of the other condition. Thus, bereavement can increase substances misuse, but substance misuse in turn can increase the risk for a maladaptive resolution of grief (Stroebe et al., 2006). The higher prevalence of complicated grief in people with substance addiction may relate to a history of more loss in this population (Furr et al., 2015), and to the interference of substance misuse on the resolution of grief (Stroebe et al., 2006).

It should also be mentioned that STB differed significantly between the reference group and all levels of grief. Even people with a low level (PGS score 0 or 1) had an almost doubled risk compared to those who had not lost anyone. The ORs increased to 3.5 for moderate grief and to 6 for dysfunctional grief. This latter result is very similar to that reported by Latham and Prigerson (2004), who associated complicated grief with a 6.58 (95%CI: 1.74, 18.0) and an 11.30 (95%CI: 3.33, 38.10) times increased likelihood of "high suicidality" at baseline and follow-up, respectively. Frumkin et al. (2021) found that bereaved adults with current suicidal thoughts, a history of suicide attempts, and overall elevated suicide risk reported significantly elevated psychological pain, consistent with this phenomenon being a predictor of STB in the literature (Flamenbaum & Holden, 2007; Holden et al., 2001; Troister & Holden, 2010). Overall, our research provides additional support that dysfunctional grief serves as an independent risk factor for suicidal thoughts and actions.

It is noteworthy that our risk estimates reached high levels. Variations between our data and those reported in previous literature could be attributed to the common differences that exist between any studies (e.g., demographics or design), but they could also result from the effect of the pandemic and/or the conditions in which the bereavement in this study occurred. It is clear that the COVID-19 pandemic has had alarming implications for individual and collective health, including the emotional and social functioning of the population (Pfefferbaum & North, 2020). As contextualized in the introduction, pandemic deaths may lead to a difficult grief adaptation, putting the bereaved at increased risk of mental health pathology. However, we must recognize that none of the observed relationships indicate causality. More literature showing the observed link in prior pandemics and longitudinal data are needed to support this theory, but both are currently lacking.

For our secondary hypothesis, we gathered evidence that loneliness played a key role in the link between bereavement and different mental health conditions. It should be noted that all indirect paths through loneliness were statistically significant in our study.

Vedder et al. (2021) very recently published a systematic review on the role of loneliness in bereavement, reporting that high levels of loneliness correlated with poorer mental and physical health. The found three clinical conditions—MDD, PTSD, and prolonged grief disorder—to be particularly associated with loneliness, consistent with our findings. Of the disorders studied, we found that PTSD was the one in which loneliness was found to have the strongest mediating capacity in its relationship with bereavement (30%). For the other disorders, however, the percentage explained by loneliness was by no means negligible. The indirect pathway reached values of 20% for GAD, 17 % for MDD, 13% for panic attacks, and 8% for STB. This indirect mediating effect was also found by other authors, as for the correlation of grief burden and depression, leading them to conclude that loneliness is the mechanism by which grief intensifies depressive symptoms in older people (Schladitz et al., 2021). Parro-Jiménez et al. (2021) concluded that social support was among the most important protective factors against complicated grief, as shown elsewhere (Heeke et al., 2017).

What we find important here is that it is feasible to intervene with loneliness. We can reinforce social systems and provide help, offering accompaniment or psychological support programs for the bereaved (e.g., bereavement groups). We are aware though, that these interventions are more difficult to implement during a pandemic. However, given the implications of loneliness on well-being, protecting individuals from loneliness may prevent dysfunctional grief in some mourners and facilitate adaptive resolution of grief with fewer risks for serious mental health disturbances. The value of this knowledge lies in being able to identify factors that can explain the relationship between intense bereavement and the development of mental health disorders. Knowing that loneliness is one such factors allows us to explore tools to make a real difference.

Despite providing knowledge on the relevance of bereavement for mental health during the pandemic, it is important to mention that the present study has some limitations. First, the data used in this research were collected by self-reported survey, so we cannot be certain of the diagnoses compared to a structured clinical interview by an expert. However, in most cases, the measures used for the assessment were validated and had good psychometric properties. A second limitation then follows our use of non-validated Spanish versions of some measures, including the PGS, on which we based a large part of this work. Nevertheless, this scale was adapted into Spanish by our team following the recommended process for transcultural adaptation and was approved by the second author of the original English version who is competent in Spanish. Moreover, we calculated and reported the internal consistency of these instruments in our sample, which (except for OSSS-3) were overall good. A third limitation is that time after death was not included as a covariate. Still, we subsequently ran statistical analyses testing its interaction with pandemic grief, and these results were not significant. Fourth, we used complicated grief as a reference to compare with dysfunctional grief, and our team chose this term due to its major representation in the literature and because it encompasses non-functional bereavement. However, it must be admitted that certain comparisons may not be fully accurate because this term was mainly considered in relation to grief intensity (assessed with the PGS) whereas "complicated grief" may have an implicit relationship with time (assessed with the Inventory of Complicated Grief). Fifth, when writing about gender identity, descriptors with modifiers (e.g., cisgender women, transgender women) are more specific than descriptors without modifiers (e.g., women) or general non-gendered terms (e.g., people, individuals). In this survey, only the male/female options were considered, something that can also be seen as a limitation. We are aware that this issue was overlooked and that there exists a wider range of gender options. In any future study we will use more inclusive and appropriate terms. Lastly, we need to bear in mind that the present analyses are cross-sectional. As mentioned, this design limits conclusions about directions and causality of associations. Our team was able to compensate for this somewhat by correcting the models for pre-pandemic mental disorders, providing a degree of temporality. When the MIND/COVID project carries out the next follow-up assessment of the same individuals, we can repeat our analyses with two time points.

Summing up, the results of this study convincingly support our hypothesis that bereavement and how this is

processed is associated with a higher risk of suffering from a range of mental health conditions. Loneliness appears to explain part of this relationship between bereavement and mental health, indicating that it is a factor to be considered in interventions, for example by targeting social engagement to promote mental health. Coupled with existing data, we think that there is now sufficient evidence to assert that people coping with moderate grief, especially when dysfunctional, should receive more psychosocial support because they are at increased risks of mental health disorders and the associated functional impairment. This implication derived from our study (and supported by other findings) can contribute to local health policies in dealing with the mental health consequences of the COVID-19 pandemic, and should be taken into account for possible future pandemics as well.

Finally, our results set the basis for further considerations. We propose a more accurate assessment of the degree to which the current pandemic had a causative or aggravating role in distress and mental disturbances within the population. Specifically, this research should focus mainly on those with a history of mental disorders. We encourage researchers to continue studying bereavement and its relationship with mental health and loneliness, a topic for which there is still a dearth of quantitative and qualitative data. Those who were bereaved and developed a low level of grief showed differences, albeit not very remarkable, to those who were not bereaved. Therefore, we established that it may not be the loss per se but how it is managed (level of grief experienced) that puts the individual at greater risk of developing a mental disturbance. Future research could also examine what factors affect the way grief is processed, including the how the loss occurred, the kinship with the deceased, or the time elapsed since the loss.

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Authors'Contributions

The study design was planned by LB-M, GF, AG-P, JD-A, PM, GV, JA. JMH. LB-M and GF conducted the data analyses and drafted the article. JMH and JA supervised the data analyses and development of the paper. The paper was edited and reviewed by all the authors. All authors read and approved the final manuscript.

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Availability of Data and Material

The de-identified participant data as well as the study protocol, statistical analysis plan, and data dictionaries used for this study are available as from publication and upon reasonable request from the corresponding author (JMH; jmharo@pssjd.org) as long as the main objective of the data sharing request is replicating the analysis and findings as reported in this paper (without investigator support), after approval of a proposal, and with a signed data access agreement.

Code Availability
Not applicable.

Declarations

Ethical approval from the relevant ethical committees (Parc Sanitari Sant Joan de Déu, Barcelona, Spain (PIC 86–20) and Parc de Salut Mar Clinical Research Ethics Committee (protocol 2020/9203/I)) was obtained.

All authors declare no conflicts of interest, neither financial nor non-financial.

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