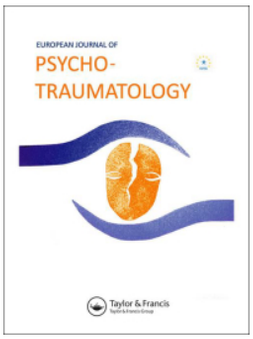

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CLINICAL RESEARCH ARTICLE

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Prevalence and correlates of ICD-11-based prolonged grief disorder in a representative Slovakian sample of recently bereaved adults

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ABSTRACT

Background: Prolonged Grief Disorder (PGD) has recently been included in both the ICD-11 and DSM-5-TR diagnostic manuals. Studying its prevalence and correlates across cultures is vital for more effective identification, treatment, and prevention.

Objective: This study aimed to examine prevalence rates of ICD-11-based PGD, in a representative Slovakian sample in response to deaths of loved ones occurring during the previous year. Further aims were to examine the factor structure of PGD symptoms and correlates of summed PGD item scores and PGD 'caseness'.

Method: Self-reported data on PGD, depression, anxiety, alcohol use, and descriptive characteristics were gathered from a representative sample of the Slovak population ($N = 319$).

Results: Data were gathered from $N = 1853$ people; 319 participants (17.2%) reported a loss in the past year. The prevalence of probable PGD among these bereaved participants was 1.99% for recent losses (<6 months, $n = 151$) and 7.75% for more distant losses (6–12 months, $n = 130$). The most frequently endorsed symptoms included longing/yearning for the deceased, sadness, denial/unrealness, and difficulty accepting the death. PGD symptoms had a unitary factor structure which was consistent for subsamples bereaved 1–5 and 6–12 months. The severity of PGD varied with kinship. Depression and anxiety, but not alcohol misuse, were associated with PGD severity and PGD caseness.

Conclusions: These findings underscore that a significant group of people develop PGD between 6–12 months following a loss. This emphasises the need for targeted psychological interventions.

Prevalencia y Correlaciones del trastorno por duelo prolongado basado en la CIE-11 en una muestra eslovaca representativa de Adultos recientemente en duelo

Antecedentes: El Trastorno por Duelo Prolongado (PGD, por sus siglas en inglés) se ha incluido recientemente en los manuales de diagnóstico CIE-11 y DSM-5-TR. Es vital estudiar su prevalencia y sus correlaciones entre culturas para una identificación, tratamiento y prevención más eficaces.

Objetivo: Este estudio tuvo como objetivo examinar las tasas de prevalencia del PGD, basado en la CIE-11, en una muestra eslovaca representativa, en respuesta a las muertes de seres queridos ocurridas durante el año anterior. Otros objetivos fueron examinar la estructura factorial de los síntomas del PGD y los correlatos de las puntuaciones sumadas de los ítems del PGD y la casuística del PGD.

Método: Los datos auto-informados sobre PGD, depresión, ansiedad, consumo de alcohol y características descriptivas se recopilaron de una muestra representativa de la población eslovaca ($N = 319$).

Resultados: Los datos se recopilaron de $N = 1853$ personas; 319 participantes (17,2%) informaron una pérdida en el último año. La prevalencia de probable PGD entre estos participantes en duelo fue del 1,99% para pérdidas recientes (<6 meses, $n = 151$) y del 7,75% para pérdidas más distantes (6–12 meses, $n = 130$). Los síntomas respaldados con más frecuencia incluyeron nostalgia/anhelo por el fallecido, tristeza, negación/irrealidad y dificultad para aceptar la muerte. Los síntomas de PGD tenían una estructura factorial unitaria que fue consistente para las submuestras en duelo de 1 a 5 y de 6 a 12 meses. La gravedad del PGD varió según el parentesco. La depresión y la ansiedad, pero no el abuso de alcohol, se asociaron con la gravedad y la casuística del PGD.

Conclusiones: Estos hallazgos subrayan que un grupo significativo de personas desarrolla PGD entre 6 y 12 meses después de una pérdida. Esto enfatiza la necesidad de intervenciones psicológicas específicas.

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Prolonged grief disorder; grief; loss; bereavement; prevalence; mental health

PALABRAS CLAVE
Trastorno por duelo prolongado; pérdida; CIE-11; prevalencia; salud mental

HIGHLIGHTS

- Prolonged Grief Disorder (PGD) is newly included in ICD-11 and knowledge about its prevalence and correlates in the general population is urgently needed.
- In a representative Slovakian sample ($N = 1853$), 319 people (17.2%) reported a loss during the past year; 7.75% of people, bereaved 6–12 months earlier, met criteria for ICD-11-based PGD.
- PGD severity and caseness were associated with kinship (but less strongly with other sociodemographic and loss characteristics) and with depression and anxiety (but less strongly with problematic alcohol use).
- At 6–12 months following loss, PGD seems fairly common in the general population and timely identification and mitigation of PGD is an important public health issue.

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1. Introduction

For at least three decades, bereavement researchers have proposed and examined different sets of criteria to define disordered, unhealthy, or complicated grief (Boelen & Lenferink, 2020; Lenferink et al., 2021). This work has culminated in the inclusion of criteria for Prolonged Grief Disorder (PGD) in the 11th edition of the International Classification of Diseases (ICD-11; World Health Organisation [WHO], 2019) and slightly different criteria for a similarly named disorder in the text revised version of the 5th edition of the Diagnostic and Statistical Manual of mental disorders (DSM-5-TR; American Psychiatric Association [APA], 2022). PGD is present when, following the death of a close person, six months (in ICD-11) or 12 months (in DSM-5-TR) earlier, someone experiences pervasive separation distress (e.g. yearning/longing and/or preoccupation) accompanied by other symptoms (e.g. difficulties accepting the loss, avoiding loss-related cues); symptoms must be associated with significant functional impairment and exceed what is considered typical according to one's cultural or religious norms.

Two meta-analyses found conditional prevalence rates of 9.8% (Lundorff et al., 2017) and 49% (Djelantik et al., 2020) in people confronted with natural losses and unnatural losses, respectively. These reviews indicated the pertinence of PGD and the impact of the cause of death on its emergence. Yet, outcomes must be viewed with caution considering that studies included in these reviews mostly relied on non-representative samples. Until a few years ago, the few studies that did examine representative samples (e.g. Kersting et al., 2011; Mizuno et al., 2012) used criteria to define PGD caseness that differed from ICD-11 and DSM-5-TR. Recently, Rosner et al. (2021) examined PGD prevalence in a representative sample of the German general population and found that, among bereaved persons, prevalence rates were 4.2% (ICD-11 criteria) and 3.3% (DSM-5-TR criteria). Shevlin et al. (2023) reported prevalence rates of ICD-11 PGD in a representative UK sample, using 'strict criteria' (i.e. symptoms scored ≥4, on a 5-point scale with anchors '1 = never' to '5 = always') and 'moderate criteria' (i.e. symptoms scored ≥3 on that same scale) and found these to be 2.4% and 7.9%, respectively.

It is imperative to further our knowledge about the prevalence of PGD as per ICD-11 and DSM-5-TR, to inform decision making in bereavement research and care. Studying rates in different countries is particularly relevant to inform cross-country efforts to study and alleviate the impact of loss (cf. Rosner et al., 2021). The current study examined prevalence rates of ICD-11-based PGD in a representative Slovakian sample,[1] in response to deaths of loved ones occurring during the previous year. Studying a relatively recently bereaved sample was deemed particularly relevant considering that elevated PGD symptomatology within the first year of bereavement is strongly predictive of persistent PGD (Boelen & Lenferink, 2022; Prigerson et al., 2009) and evidence showing that it can be successfully reduced with psychological interventions (Litz et al., 2014; Reitsma et al., 2023).

Thus, the first aim of this study was to examine prevalence rates of ICD-11-based PGD. In so doing, we examined rates among people passing the ≥6 months since loss timing criterion and, for exploratory reasons, more recently (<6 months) bereaved people. The second aim was to examine the factor structure of PGD symptoms. Consistent with prior research (e.g. Lenferink et al., 2022, 2024), we evaluated the fit of a unitary model (with all symptoms loading on one dimension) and a two-factor model (representing two separation distress symptoms, and all 'accompanying' symptoms as distinct factors). The third aim was to examine the endorsement rates all PGD symptoms, in order to enhance our understanding of the performance of each symptom as indicator of PGD (cf. Rosner et al., 2021; Shevlin et al., 2023). The fourth aim was to examine to what extent summed scores of PGD items, as well as meeting vs. not meeting criteria for PGD caseness were associated with sociodemographic and loss-related variables. Based on prior research (e.g. Burke & Neimeyer, 2013; Buur et al., 2024; Djelantik et al., 2020), we anticipated that higher PGD scores and prevalence rates would be observed in women (compared to men), people who lost a partner or child (compared to other relatives), and those confronted with losses due to unnatural (vs. natural) causes. Our fifth and last aim was to examine associations of PGD scores and caseness with concurrently assessed depression and anxiety symptoms and alcohol misuse. Based on prior research studying the co-occurrence of PGD with depression and anxiety (e.g. Komischke-Konnerup et al., 2021) and alcohol use (e.g. Parisi et al., 2019), we expected that significant positive associations would emerge.

2. Methods

2.1. Participants and procedure

Data were available from $N = 1853$ individuals, constituting a representative sample of the population from Slovakia, participating in a longitudinal, 10-wave study, spanning four years (August 2020–December 2023) (project APVV-20-0319; Vargová et al., 2023[2]). Data collection was performed online, by a specialised Slovak agency. Participants were recruited based on quota characteristics (for gender, age, region, and education). Given the longitudinal design, the

Table 1. Characteristics of bereaved sample ($N = 319$).

Sex, *n* (%)	
Male	126 (39.5%)
Female	192 (60.2%)
Other	1 (0.3%)
Age in years, *M* (SD)	47.6 (15.2)
Education	
No primary school or primary school	3 (0.9%)
High school without diploma	61 (19.1%)
High school with diploma	129 (40.4%)
Bachelor or master degree	116 (36.4%)
PhD	9 (2.8%)
The deceased was, *n* (%)	
Partner	10 (3.1%)
Child	6 (1.9%)
Parent	67 (21%)
Another person	236 (74%)
Months since loss, *M* (SD)[a]	5.6 (3.9)
Cause of death, *n* (%)	
Illness or physical condition	286 (89.7%)
Accident	10 (3.1%)
Suicide	4 (1.3%)
Another cause	16 (6%)

[a]All analyses concerning time since loss were conducted on a sample of $n = 280$ who provided valid information about the time of their loss.

representativeness of the sample slightly diminished over time.[3] The present study was based on Wave 9 (summer 2023) data, in which PGD symptoms were assessed for the first time. The study and data collection adhered to the ethical standards outlined in the Declaration of Helsinki and were approved by the Ethics Committee at the Centre of Social and Psychological Sciences, Slovak Academy of Sciences. Each participant provided informed consent.

In the total sample ($N = 1854$), 319 (17.2%) individuals reported a loss during the previous year. Table 1 summarises demographic and loss-related characteristics of the sample. About 60% of the bereaved sample were women; the loss usually involved someone other than a partner, child, or parent and was usually caused by illness.

2.2. Measures

PGD symptoms were examined using items from the Traumatic Grief Inventory-Self Report Plus (TGI-SR+; Lenferink et al., 2022). The TGI-SR + is a 22-item measure allowing assessment of different conceptualizations of PGD (including ICD-11 – and DSM-5-TR-based PGD). Respondents rate the presence of symptoms on five-point scales ranging from 1 = never to 5 = always. To limit respondent burden, only 13 items were administered, representing 12 symptom-criteria and the functional impairment criterion as defined in the ICD-11-based criteria (see Table 2). The internal consistency of these items was $\omega_{total} = .96$. In keeping with prior research (e.g. Ashouri & Yousefi, 2023; Kokou-Kpolou et al., 2022; Lenferink et al., 2024), the cultural deviation item was not included.

Depression symptoms, as designated in DSM-IV (APA, 2000) and DSM-5 (APA, 2013), were assessed with the 16-item Quick Inventory of Depressive Symptomatology (QIDS; Rush et al., 2003). Participants rated the frequency of symptom (e.g. 'Feeling irritable') during the preceding seven days on scales with four answer options ranging from 0 through 3. We used the scoring rule from Rush et al. (2003) meaning that we summed the highest score of the four sleep items, the highest score of the four appetite/weight items, the highest score of the two psychomotor items, plus the scores on the remaining six items. Psychometric properties of the QIDS are generally adequate (Reilly et al., 2015). The omega total coefficient in the present sample was $\omega_{total} = .90$.

Anxiety symptoms were assessed using the Generalised Anxiety Disorder Scale-7 (GAD-7). This is a seven-item self-report scale developed by Spitzer et al. (2006) as a screening tool and severity indicator for generalised anxiety, consistent with the core generalised anxiety disorder criteria as listed in the DSM-IV (APA, 2000) and DSM-5 (APA, 2013). Respondent rate items ('Worrying too much about different things') on four-point scale (0 = not at all to 3 = nearly every day). Research has shown that psychometric properties of the measure are good (e.g. Rutter & Brown, 2017). Present sample's internal consistency of the items was $\omega_{total} = .95$.

The Alcohol Use Disorders Identification Test (AUDIT) was used to measure problems associated with alcohol consumption. It is a 10-item measure, reflecting the ICD-10 (WHO, 1993) definitions of alcohol dependence and harmful use, developed by the WHO (Babor et al., 1992) that instructs respondent to rate alcohol use, dependency, and problems on four-point scales with different anchors. Items can be summed to obtain an index of potentially hazardous alcohol intake. The scale has demonstrated satisfactory psychometric properties (De Meneses-Gaya et al., 2009). The omega total coefficient of the items in this study was $\omega_{total} = .94$.

2.3. Statistical analyses

Prior to the analyses,[4] we examined the demographic characteristics of the participants and patterns of missing data. Overall, 3.8% of the data were missing. This mostly concerned information about the exact time since loss and AUDIT items for participants who indicated no alcohol use. Besides these, as few as 0.3% of the data were missing. One participant was excluded, due to too many missing data (85%) on the PGD measure. The data on PGD and other mental health indicators were imputed using the chaining random forests algorithm (Stekhoven & Bühlmann, 2012). For our first aim, to estimate PGD prevalence, participants were considered to meet criteria for PGD caseness when they had a score of 4 or higher on one of

Table 2. Frequency of occurrence of single symptoms of prolonged grief in recently (<6 months, $n = 151$) and more remotely (≥6 months, $n = 130$) bereaved participants.

ICD-11 symptom	TGI-SR+ item	Bereaved <6 months, *n* (%)	Bereaved ≥6 months, *n* (%)
Separation distress			
Longing for the deceased	I found myself longing or yearning for the person who died	31 (20.5)	33 (25.6)
Persistent preoccupation with the deceased	I had intrusive thoughts or images related to the person who died	14 (9.2)	15 (11.6)
Accompanying symptoms			
Sadness	I experienced intense emotional pain, sadness, or pangs of grief	31 (20.5)	36 (27.9)
Guilt	I had negative thoughts about myself in relation to the loss (e.g. thoughts about self-blame)	4 (2.7)	13 (10.1)
Anger	I felt bitterness or anger related to his/her death	18 (11.9)	27 (20.9)
Denial	It felt unreal that he/she is dead	42 (27.8)	46 (35.7)
Blame	I put an intense blame on others because of his/her death	7 (4.6)	7 (5.4)
Difficulty accepting the death	I had trouble accepting the loss	39 (25.8)	42 (32.6)
Feeling one has lost a part of one's self	It felt as if a part of me has died along with the deceased	14 (9.3)	26 (20.2)
An inability to experience positive mood	I had difficulties experiencing positive feelings	24 (15.9)	31 (24.0)
Emotional numbness	I felt emotionally numb	22 (14.6)	29 (22.5)
Difficulty in engaging with social or other activities	I felt that moving on (e.g. making new friends, pursuing new interests) was difficult for me	14 (9.3)	21 (16.3)
Functional impairment			
The disturbance causes significant impairment in personal, family, social, educational, occupational or other important areas of functioning	I noticed significant reduction in social, occupational, or other important areas of functioning (e.g. domestic responsibilities) as a result of his/her death	4 (2.7)	13 (10.1)

the two separation distress items, one of the accompanying symptoms, and on the disability item (Table 1). This same scoring algorithm was used in the study by Lenferink et al. (2022) introducing and examining the TGI-SR+. For exploratory reasons, we also counted PGD caseness when increasing the number of required accompanying symptoms from 2+ through 7+ symptoms.[5] For the second aim, a confirmatory factor analysis (CFA) of the one-factor model, as well as a competing two-factor model (e.g. Ashouri & Yousefi, 2023), was carried out.[6] In the one-factor model, the two separation distress symptoms and 10 accompanying symptoms (Table 2) loaded on one factor; in the two-factor model, the two separation distress symptoms and 10 accompanying symptoms loaded on two factors. The models were estimated using the weighted least square mean and variance adjusted (WLSMV) estimator while treating the items (scores 1–5) as ordinal. The chi-square statistics (e.g. Ropovik, 2015) and approximate fit indices (comparative fit index [CFI], Tucker Lewis Index [TLI], root mean square error of approximation [RMSEA], and Standardised Root Mean Square Residual [SRMR][7]; Hu & Bentler, 1999) were calculated, and the models' fit indices were then compared. Subsequently, invariance testing was performed to ensure that the measurement model operates in the same way across the subsamples (bereaved <6 months and bereaved ≥6 months earlier; in accord with the timing criterion). The measurement invariance models sequentially tested configural invariance, metric invariance, scalar invariance, and strict (means) invariance using the scaled chi-square difference test (Putnick & Bornstein, 2016).

For the third aim, descriptive statistics were used to count endorsement of individual symptoms. For the fourth aim, we used chi-square tests, correlations, Welch's t-tests, and analysis of variance (including Kruskal–Wallis test as the non-parametric alternative; *p*-values for multiple comparisons were adjusted using the Bonferroni–Holm method) to examine if summed PGD scores were associated with age, gender, education, time since loss, relationship to the lost person, and cause of death.[8] Similar tests were used to examine if people meeting caseness vs. not meeting caseness differed in terms of these variables, in the group of people bereaved 6–12 months earlier. For the fifth aim, correlations were calculated between the summed PGD items and measures tapping depression, anxiety, and alcohol use. Finally, t-test were calculated to examine differences in symptom scores between people meetings vs. not meeting criteria for PGD caseness. As a supplementary analysis, a regression model (Ordinary Least Squares [OLS]), using all the aforementioned possible PGD correlates as predictors, was estimated; this is included in the supplementary table. Data, R code, and full analytic outputs, including supplementary analyses, are available at https://osf.io/ua2jr/.

3. Results

3.1. PGD prevalence rates

As shown in Table 3, the prevalence of probable PGD among bereaved participants was 1.99% (95% CI [0.00%, 4.21%]) and 7.75% (95% CI [3.14%, 12.37]) among recently (<6 months, $n = 151$) and more remotely (≥6 months, $n = 130$) bereaved participants, respectively. Rates decreased when increasing the number of additional symptoms from 1+ to 7+. The prevalence rates of probable PGD were similar for

Table 3. Prevalence of probable ICD-11-based PGD.

	Bereaved <6 months (n = 151) % (95% CI)	Bereaved ≥6 months (n = 130) % (95% CI)
1+ additional symptom	1.99% (0.00%, 4.21%)	7.75% (3.14%, 12.37%)
2+ additional symptoms	1.99% (0.00%, 4.21%)	7.75% (3.14%, 12.37%)
3+ additional symptoms	1.99% (0.00%, 4.21%)	7.75% (3.14%, 12.37%)
4+ additional symptoms	1.32% (0.00%, 3.15%)	7.75% (3.14%, 12.37%)
5+ additional symptoms	1.32% (0.00%, 3.15%)	6.98% (2.58%, 11.37%)
6+ additional symptoms	0.66% (0.00%, 1.96%)	6.20% (2.04%, 10.36%)
7+ additional symptoms	0.66% (0.00%, 1.96%)	6.20% (2.04%, 10.36%)

Note: ICD-11 PGD = Prolonged Grief Disorder as defined in the 11th edition of the International Classification of Diseases.

female (6.77%, 95% CI [3.22%, 10.32%]) and male (6.40%, 95% CI [2.11%, 10.69%]) participants.

3.2. Factor structure

Results of the CFA are summarised in Table 4. The one-factor model fit the data well ($\chi^2(54) = 218.86$, $p < .001$; CFI = 0.98; TLI = 0.97; RMSEA 0.10; SRMR = 0.05). The two-factor model did not have a significantly better fit ($\Delta\chi^2(1) = 2.36$, $p = .124$; differences in other approximate fit indices ≈ .00). Accordingly, we only report measurement invariance testing for the one-factor model. The invariance testing indicated that the measure achieved metric ($\Delta\chi^2(11) = 5.86$, $p = .883$), scalar ($\Delta\chi^2(11) = 2.64$, $p = .995$), and factor means ($\Delta\chi^2(1) = 1.09$, $p = .297$) invariance, meaning that the PGD construct was perceived similarly across the subsample bereaved <6 months and bereaved ≥6 months earlier, allowing for meaningful comparisons of the scores between these subsamples.

3.3. Endorsement rates of PGD symptoms

Table 2 shows frequency statistics of PGD symptoms in the two groups differing in time since loss. In both groups, longing/yearning for the deceased, sadness, denial/unrealness, and difficulty accepting the death were the most frequently endorsed symptoms.

3.4. Correlates of PGD total scores

Correlates of PGD total scores were considered for the whole sample ($N = 319$). Scores did not differ significantly between females ($M = 26.97$, SD = 10.96) and males ($M = 24.96$, SD = 10.59) ($t(271.4) = 1.63$, $p = .105$; Cohen's $d = 0.19$) and were unrelated with age ($r = .03$, $p = .603$) and education ($r = -.04$, $p = .453$). Scores were positive correlated with time since loss ($r = .12$, $p = .048$) and differed by kinship (Kruskal–Wallis(3) = 21.29, $p < .001$). Scores were lower when the lost person was some person other than partner, child, or parent ($M = 23.89$, SD = 9.26), compared to when the lost person was a partner ($M = 38.70$, SD = 11.86), a child ($M = 44.33$, SD = 10.21), or parent ($M = 31.16$, SD = 12.18) (ps < .001). Scores were also lower when the lost person was a parent compared to a partner ($p = .033$) and a child ($p = .003$). Lastly, scores did not significantly differ by cause of death (Kruskal–Wallis(3) = 2.46, $p = .063$) and, as such, were comparable after a loss due to illness/physical condition ($M = 25.98$, SD = 10.94), an accident ($M = 28.20$, SD = 7.22), suicide ($M = 40.50$, SD = 11.59), or other cause ($M = 26.74$, SD = 11.44).

3.5. Factors associated with PGD caseness

Table 5 shows sociodemographic and loss-related characteristics of participants meeting vs. not meeting criteria for probable PGD caseness. Included were $n = 130$ who met the timing criterion for PGD and, thus, were bereaved 6–12 months earlier. Caseness did not differ as per gender (Fisher's exact test, $p = 1$), age ($t = 0.37$, $p = .717$), education ($\chi^2(4) = 0.760$, $p = .944$), and cause ($\chi^2(3) = 3.59$ $p = .310$). Caseness was associated with kinship ($\chi^2(3) = 19.90$, $p < .001$). Specifically, individuals who lost a partner were more likely to meet the criteria for caseness compared to those who lost a distant person ($p < .001$). Likewise, individuals who lost a child also showed a higher likelihood of caseness compared to those who lost a more distant person ($p < .001$).

3.6. Associations of PGD scores and PGD caseness with depression, anxiety, and alcohol use

Summed PGD item scores were significantly correlated with depression ($r = .43$, $p < .001$) anxiety ($r = .45$, $p < .001$), and alcohol use ($r = .23$, $p = <.001$) in the whole sample ($N = 319$). In the group of ≥6 months bereaved participants ($n = 130$), depression

Table 4. Fit statistics, models comparison, and invariance testing.

Model fit	χ^2	df	p	CFI	TLI	RMSEA [95% CI]	SRMR
1-factor model	218.86	54	<.001	.98	.97	.10 [.09, .11]	.05
2-factor model	216.65	53	<.001	.98	.97	.10 [.09, .11]	.05
Models comparison	$\Delta\chi^2$	Δdf	p	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR
	2.36	1	.124	.00	.00	.00	.00
Model invariance (1-factor model)	$\Delta\chi^2$	Δdf	p	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR
Loadings	5.86	11	.883	.03	.04	.02	.02
Intercepts	2.64	11	.995	.00	.01	.00	.00
Means	1.09	1	.297	.01	.01	.01	.01

Table 5. Sociodemographic and loss-related characteristics for people meeting vs. not meeting criteria for probable PGD among participants bereaved ≥6 months ($n = 130$).

	Not meeting criteria for probable PGD	Meeting criteria for probable PGD	Tests for differences
Sex, *n* (%)			
Male	41 (31.5%)	3 (2.3%)	Fisher's exact test: $p = 1$
Female	78 (60%)	7 (5.4%)	
Age in years, *M* (SD)	48.2 (14.2)	48.6 (13.1)	Welch's t-test: $t(10.84) = 0.37$, $p = .717$
Education			
No primary school or primary school	1 (0.8%)	0	Pearson's chi-square test: $\chi^2(4) = 0.76$, $p = .944$
High school without diploma	23 (17.7%)	2 (1.5%)	
High school with diploma	52 (40%)	3 (2.3%)	
Bachelor or master degree	37 (28.5%)	4 (3.1%)	
PhD	5 (3.8%)	0	
The deceased was, *n* (%)			
Partner	4 (3.1%)	2 (1.5%)	Pearson's chi-square test: $\chi^2(3) = 19.90$, $p < .001$
Child	2 (1.5%)	2 (1.5%)	
Parent	29 (22.3%)	4 (3.1%)	
Another person	84 (64.6%)	2 (1.5%)	
Months since loss, *M* (SD)	9.3 (2.1)	9.5 (2.1)	Welch's t-test: $t(10.66) = -0.24$, $p = .818$
Cause of death, *n* (%)			
Illness or physical condition	107 (82.3%)	9 (6.9%)	Pearson's chi-square test: $\chi^2(3) = 3.59$, $p = .310$
Accident	1 (0.8%)	0	
Suicide	2 (1.5%)	1 (0.8%)	
Another cause	9 (6.9%)	0	

scores differed significantly between those meeting ($M = 18.80$, SD = 5.96) vs. not meeting ($M = 14.18$, SD = 4.15) criteria for PGD caseness ($t(9.75) = 2.40$, $p = .038$; Cohen's $d = 1.08$). Anxiety scores also differed between those meeting ($M = 16.70$, SD = 5.36) vs. not meeting ($M = 11.39$, SD = 3.90) criteria for PGD caseness ($t(9.82) = 3.07$, $p = .012$; Cohen's $d = 1.33$) and alcohol use scores did not differ between those meeting ($M = 15.33$, SD = 4.47) vs. not meeting ($M = 14.05$, SD = 4.15) criteria for PGD caseness ($t(9.31) = 0.83$, $p = .428$; Cohen's $d = 0.31$).

4. Discussion

Considering that PGD was recently included in ICD-11 and DSM-5-TR it seems imperative to examine prevalence rates and correlates of PGD in different bereaved subgroups and cultures. Increased knowledge about these issues could inform bereavement research and help to shape health care policies to improve bereavement care (cf. Ashouri & Yousefi, 2023; Hyland et al., 2024; Killikelly et al., 2020; Shevlin et al., 2023). The current study examined prevalence rates of ICD-11-based PGD associated with a loss within the previous year, in a representative sample of the adult Slovakian population. A first main finding was that prevalence of PGD was 7.75% among those who passed the 6 months timing criterion. This rate is higher than rates reported by Rosner et al. (2021) who studied a representative German sample (bereaved 1–911 months earlier) and Shevlin et al. (2023) examining a UK bereaved sample (bereaved 6 months to 10 years earlier). This is presumably linked to the fact that their samples included people bereaved longer than one year ago. PGD rates likely decrease among more remotely bereaved people. Consistent with prior research (e.g. Boelen & Lenferink, 2020; Rosner et al., 2021), PGD prevalence rates decreased when we increased the number of required additional symptoms from 1+ to 7+. It still seems that 1+ sets the threshold for meeting PGD criteria rather low and that it makes sense to reconsider this cut-off point.

Our second main finding was that, in the whole sample as well as the recently (<6 months) and more remotely bereaved (≥6 months) subsamples considered separately, PGD symptoms formed a unitary factor. This is consistent with prior research showing that PGD symptoms as defined in ICD-11 are best described as forming one dimension (Ashouri & Yousefi, 2023; Boelen & Lenferink, 2020; Kokou-Kpolou et al., 2022; Lenferink et al., 2022, 2024). Notably, some other studies have found these symptoms to represent two distinguishable dimensions of separation distress and accompanying symptoms (e.g. Hyland et al., 2024; O'Connor et al., 2023); however, in most of the studies examining the dimensionality, both the one – and two-dimensional models evidenced acceptable fit. Considering individual symptoms, longing/yearning, sadness, denial/unrealness, and difficulty accepting the death were endorsed most. It is salient that the same symptoms were endorsed most in Rosner et al.'s (2021) analyses, in people bereaved up to three years ago. Phenomenologically, these phenomena are at the heart of both healthy and unhealthy grief. By themselves they are not indicative of disturbed grief per se, but in combination with other phenomena and when they contribute to suffering and dysfunction they may indicate a grief disorder.

We also examined correlates of PGD severity and caseness. PGD severity differed as a function of kinship with higher scores reported by people who lost a partner, child, or parent relative to people who lost more distant persons. Among those meeting the ≥6

months timing criterion, PGD caseness was also associated with kinship, with loss of a partner yielding an elevated chance of meeting criteria for caseness. This is broadly consistent with prior evidence that loosing closer persons cause more intense reactions (Burke & Neimeyer, 2013; Buur et al., 2024; Djelantik et al., 2020). We found no evidence that PGD severity and caseness differed as a function of gender, age, and education. Some other recent studies similarly found no association with gender (e.g. Hyland et al., 2024; Lenferink et al., 2024). Regarding age, Hyland et al. (2024) observed that increased age was associated with a lower chance of meeting criteria for PGD in their UK (but not their Irish) sample. Shevlin et al. (2023) also found older individuals to have lower chance of PGD compared to younger bereaved counterparts. Inconsistent with our findings, there is quite some evidence that lower education is associated with higher PGD severity scores (Ashouri & Yousefi, 2023; Buur et al., 2024; Lenferink et al., 2024). We did not find PGD severity and caseness to differ as a function of cause. This is particularly notable considering that cause has often been found to be related to bereavement outcome (Burke & Neimeyer, 2013; Djelantik et al., 2020).

Taken together, our findings regarding correlates of PGD severity and caseness are not all consistent with prior research. This may be due to methodological differences between studies. Most notably, some differences may be due to the fact that we studied a relatively recently bereaved group, whereas prior research included samples with a wider range of time since loss (e.g. Buur et al., 2024; Shevlin et al., 2023). Both for clinical and research purposes, it is important to be able to characterise people who are at increased risk of PGD and to be able to do so for people varying in terms of time elapsed since the loss. Therefore, future research should continue to examine risk factors and correlates of PGD severity and caseness in different bereaved samples.

Our last aim was to examine associations of PGD severity and caseness with concomitant symptoms of depression, anxiety, and alcohol misuse. Associations with depression and anxiety symptoms were moderate and consistent with prior research (e.g. Komischke-Konnerup et al., 2021). Although associations may be partly due to a common underlying vulnerability for PGD, depression, and anxiety (e.g. increased neuroticism), findings are important in showing that, already in the first year of bereavement, PGD symptoms coincide with other aspects of mental ill-health. Problematic alcohol use had a weak association with PGD severity and did not differ between people meeting vs. not meeting criteria for PGD caseness. This seems at odds with prior research (Parisi et al., 2019). Yet, it may be that associations of PGD with alcohol use (and possible other externalising problems) are more pronounced in more distressed (e.g. clinical) samples or only manifest later in time (beyond the first anniversary of the loss). This issue should be addressed further in future research.

There are several limitations that must be considered. First, data were all gathered with self-report measures and self-report of PGD symptoms may have led to an overestimation of the prevalence of PGD (cf. Kramer et al., 2023). More work is needed to examine PGD prevalence, based on clinical interview-based assessment. Second, we only considered ICD-11-based PGD and not DSM-TR-based PGD; since criteria and prevalence rates differ between both systems (e.g. Boelen & Lenferink, 2020; Rosner et al., 2021), the present finding may not necessarily generalise to PGD as per DSM-5-TR. Third, with the selection of items from the TGI-SR+, we did not measure the extent to which grief responses deviated from community or cultural norms, which is one of the formal criteria of PGD in ICD-11 and is, in fact, included in other measures (e.g. the International Prolonged Grief Disorder Scale, Killikelly et al., 2020; the International Grief Questionnaire, Hyland et al., 2024). Fourth, participants had suffered losses up to 12 months ago and findings may not generalise to the population of people who suffered losses longer ago. Fifth, the limited sample size, particularly in subgroup analyses and comparisons, has decreased statistical power necessary to detect smaller associations between variables considered.

Notwithstanding these considerations, the present study adds to prior evidence that a significant group of people facing the loss of a loved one develop PGD over the course of the first year of bereavement. Research shows that increased PGD symptoms, before the first anniversary of a loss, strongly predicts persistent PGD (Boelen & Lenferink, 2022; Prigerson et al., 2009) but, at the same time, can be effectively reduced with psychological interventions (Litz et al., 2014; Reitsma et al., 2023). Thus, it is important to improve options to identify and treat PGD in a timely manner to avoid unnecessary protracted suffering of people *en route* toward chronic PGD.

Notes

1. To the best of our knowledge, no data on PGD exists for the Slovak population.
2. APVV refers to Agentúra na podporu výskumu a vývoja, the national grant agency established to support research and development in Slovakia.
3. A slightly increased proportion of female participants and individuals with a university degree participated in the later waves of the longitudinal study.
4. The data used for this study were already cleaned for careless responding patterns and improbable values based on the combination of improbably fast responding, failed attention checks, multivariate outliers, and longstrings. The cleaning was done for the

purposes of the project APVV-20-0319 (Vargová et al., 2023).
5. Since the introduction of the ICD-11 PGD criteria, researchers have reflected on the number of additional symptoms required for a PGD-diagnosis, and to what extent this number affects PGD prevalence (see, e.g., Boelen & Lenferink, 2020; Eisma et al., 2020). To inform further consideration of this topic, we calculated prevalence rates for different numbers of additional symptoms.
6. The models included the 12 PGD symptoms. As a supplementary analysis, the models were also estimated including the functional impairment item (available at https://osf.io/ua2jr/).
7. CFI > .95, TLI > .95, RMSEA < .06, and SRMR < .08 were used as the criteria indicating very good model-data fit (Hu & Bentler, 1999).
8. Age and time since loss were treated as continuous variables, education was treated as an ordered variable, and gender, kinship, and cause of death were treated as categorical variables.

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No potential conflict of interest was reported by the author(s).

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Data availability statement

Data, R code, and full analytic outputs are available at https://osf.io/ua2jr/.

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