## Original Article

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# Psychometric properties of the PG-13-R scale to assess prolonged grief disorder among bereaved Iranian adults

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## Abstract

**Objectives.** The PG-13-Revised (PG-13-R) is a self-report measure to assess prolonged grief disorder (PGD) in terms of Diagnostic and Statistical Manual of Mental Disorders, fifth revision, Text Revision. This measure has been shown to yield good psychometric properties in Western samples. This study aimed to evaluate the psychometric properties of the Persian PG-13-R.

**Methods.** Three hundred forty-seven individuals (209 women and 138 men) fully completed the scales. The participants were recruited using convenience sampling. The confirmatory factor analysis (CFA), convergent and divergent validity, and reliability of the Persian version of the PG-13-R were evaluated.

**Results.** CFA results of a unidimensional model support the construct validity of this version of the PG-13-R. The results of this study demonstrated that this version of the PG-13-R has internal consistency reliability (omega coefficient of 0.93), and the test–retest reliability with an interval of 6 weeks was 0.89. The convergent and divergent validity was shown with significant correlations between the PG-13-R and measures of depression, PTSD, functional impairment, and hope.

**Significance of results.** Overall, the Persian version of the PG-13-R showed good psychometric properties in the Iranian population.

## Introduction

Grief is a common, natural response one experiences after a significant and permanent loss and includes psychological, physical, spiritual, social, and cultural dimensions. Grief is usually caused by the death of the loved one, but it may also be caused by the death of a pet, the end of a relationship (i.e., divorce), or the loss of property (Shear et al. 2011; Stroebe 2008). Grief may be strong or weak, brief or prolonged, immediate or delayed; particular aspects of grief may be deviate, and symptoms used to cause little trouble, may become major sources of distress (Parkes and Prigerson 2010; Prigerson et al. 2009).

Various types of griefare not mental health issues, and usually, 12 months after the disappearance, most of the symptoms go away. However, in about 10% of people, the symptoms become more severe and prolonged over time (American Psychiatric Association 2022). Researchers have referred to this condition under various headings such as pathological grief, traumatic grief, unresolved grief, prolonged grief, and complicated grief (Boelen et al. 2003; Prigerson et al. 2009; Yousefi et al. 2022; Zisook et al. 1985). Research over the past quarter century has shown that not only a small but a substantial proportion of grief reactions can be severe, disabling, and endure beyond normal expectations and that they may respond only to specialist treatment (Prigerson et al. 2021a). Specifically, studies have documented that certain grief symptoms are distinct from those of bereavement-related depression (Boelen and van den Bout 2005; Prigerson et al. 1995, 2009, 2021b), have idiosyncratic neurobiological (Kakarala et al. 2020) and clinical (Boelen et al. 2016; Johnson et al. 2007; Wright et al. 2010) correlates, can persist unabated for months or even years (Maciejewski et al. 2007; Prigerson et al. 2009), prove distressing and dysfunctional (Maciejewski et al. 2016, 2007; Prigerson et al. 1997), and may only respond to targeted intervention (Reynolds et al. 1999; Shear et al. 2005). Thus, there exists a substantial and mounting body of evidence in support of a psychiatric syndrome of maladaptive grief (Prigerson et al. 2021a).

The prolonged grief disorder (PGD) is a diagnostic entity now included in the 11th edition of the International Classification of Diseases (ICD-11) and in the text

revision of the 5th edition of the Diagnostic and Statistical Manual (DSM-5-TR [Boelen and Lenferink 2020; Kokou-Kpolou et al. 2022; Prigerson et al. 2021b]). Although they carry the same name, the time criterion (12 vs. 6 months' post-loss, respectively), the number of symptoms (10 vs. 12, respectively), and the content of the symptoms of PGD in DSM-5-TR and ICD-11 differ (Lenferink et al. 2022; Eisma et al. 2020).

Since studies have shown that PGD is different from major depression disorder, post-traumatic stress, and anxiety disorders (Cozza et al. 2016; Horowitz et al. 1997; Prigerson et al. 1996, 1995, 2000) and affects mental and physical health (Ott 2003; Prigerson et al. 1997), the need for a tool of high credibility and validity is essential to help diagnose the disorder. Studies have shown that a provision for a good and complete treatment is having a correct diagnosis (Yousefi et al. 2022), one of which is the existence of scales that have optimal psychometric properties. The versatile PG-13-Revised (PG-13-R) developed by Prigerson et al. (2021a) made it possible. PG-13-R is a validated and robust diagnostic tool for PGD. The PG-13-R, an adapted version of the PG-13 scale, is designed to map onto these criteria (DSM PGD), using data from investigations conducted at Yale University ($N = 270$), Utrecht University ($N = 163$), and Oxford University ($N = 239$). The PG-13-R grief symptoms represent a unidimensional construct, with high degrees of internal consistency (Cronbach's alpha = 0.83, 0.90, and 0.93 for Yale, Utrecht, and Oxford, respectively) (Prigerson et al. 2021a). There have been several validation studies of PG-13 (Delalibera et al. 2011; Field et al. 2014; Gökler Danışman et al. 2017; Işıklı et al. 2022; Maciejewski et al. 2016; Pohlkamp et al. 2018; Tsai et al. 2018) but so far not in Iran.

Grief is a universal experience (Sadock et al. 2017); however, the way of expressing grief and bereavement is considerably connected with the cultural conventions. According to the cross-cultural findings (Davies et al. 1998; Martinson et al. 2000), the expression of grief reactions to the loved ones' death depends upon cultural and social differences between East and West (Esmaeilpour and Bakhshalizadeh Moradi 2015). Furthermore, rather than being an individual reaction, bereavement is a collective reaction to the loss of a loved one, which is usually caused by the cultural guidelines and time frame in which it occurs (Bedikian 2008; Humphrey 2009; Stroebe 2008). The family's outward appearance, the clothes they wear, the religious rituals they perform, and even the food they eat are among behaviors associated with bereavement rituals (Humphrey 2009).

In Iran, numerous rituals are performed for mourning, including the funeral, the third day after the death, the seventh day after the death, the fortieth day after the death, and the death anniversary rites (Izadi-Mazidi and Riahi 2021). Moreover, in mourning rituals, a particular sequence of customs is followed, namely arranging a funeral, burying the deceased in the presence of their friends and relatives, forming an assembly of relatives in the deceased's home for comforting the bereaved family, and performing the religious rituals such as reading Quran and giving donations in memory of the deceased (Shoraka et al. 2022). Further, after the loss of a loved one, the bereaved are not expected to work or continue to carry out routine tasks for a while. Throughout this period of time, they are supported by their family and friends in order to cope with the grieving process (Nohesara et al. 2022).

The present study represents an international contribution to the validation of the PG-13-R in Iranian population. A prior published Persian study relied on the translated version, the Inventory of Complicated Grief (ICG) (Yousefi et al. 2022). Thus, there is a lack of formal and reliable validated PGD assessment tools in Iranian population. This study also contributes to promote global applicability of the PGD guidelines in research and practice. International research efforts are of utmost importance for cross-cultural validity of grief assessment tools (Killikelly et al. 2020; Kokou-Kpolou et al. 2022). The aim of this study was to examine the psychometric properties of the Persian version of the PG-13-R among bereaved Iranian adults, specifically the factor structure, the reliability, and other aspects of validity.

## Method

### *Participants and procedure*

A total of 347 people participated in the study. The inclusion criteria were as follows: participants had to be over 18 years of age and having lost a loved one (parent, spouse, or sibling) due to death at least 12 months and not more than 3 years before the study. Exclusion criteria were as follows: incomplete and inconsistent responses to the questionnaires. The sample was selected using the convenience sampling method. Considering the Myers et al.'s (2011) suggestion of a sample size of 200 individuals for confirmatory factor analysis (CFA), we selected a sample size of 360 bereaved adults. However, 347 individuals (209 women and 138 men) fully completed the scales. Men ranged in age from 18 to 65 years ($M = 36.2 \pm 9.26$), and average PGD score ranged from 10 to 50 ($M = 27.44 \pm 9.95$). Women ranged in age from 18 to 69 years ($M = 38.02 \pm 8.92$), and average PGD score ranged from 10 to 50 ($M = 33.66 \pm 9.74$). All participants were recruited over the internet through announcements on social media (WhatsApp, Instagram, Telegram, and Facebook) and websites for online support groups for bereaved individuals or advertisements on the content network of Google in Iran. People interested in participation could access an online questionnaire after reading the research information (e.g., on study goals and confidentiality of study participation) and giving informed consent. The entire process took about 19 minutes to complete. Participants who had experienced a loss at least 12 months and up to 3 years ago were recruited. While online data were gathered, control strategies were employed, such as monitoring how many minutes it took each participant to complete the questionnaire and whether the questionnaire was completed more than once from the same computer. The controls did not reveal any elements that could affect the reliability of the data collection process. The participants were given the telephone number and e-mail address of the researcher so that it was possible to contact the researcher in the event of any problems while completing the questionnaire. We collected data between 25 April 2022 and 15 July 2022. The PG-13-R was translated into Persian according to recommendations for cross-cultural adaptation of self-report measures (Beaton et al. 2000):

1. First, 2 bilingual native speakers of Persian (the first was a mental health professional with knowledge of the subject matter and the second was a professional translator without knowledge of the subject matter) made 2 independent translations from English to Persian. Based on the comparison of the 2 translations, any discrepancies were resolved by consensus, and an initial Persian version of the PG-13-R was developed.
2. Second, the initial PG-13-R version was translated back into English by 2 independent translators whose native language was English, but who were fluent in PG-13-R.
3. The 4 translators mentioned above, together with 2 subject matter experts who were members of the research team, evaluated

all translated versions and the original version to determine face validity and cross-cultural equivalency. All discrepancies were resolved by consensus, from which a draft version of the PG-13-R in Persian was developed.

4. Fourth, the preliminary version of the PG-13-R was administered to 30 adults (53.3% men, $M_{age} = 34.72 \pm 6.46$, average PGD score ranged from 10 to 50, $M_{PGD} = 30.11 \pm 7.54$) to assess its comprehensibility and readability. The experts together with the translators reviewed the results of the initial application to modify the PG-13-R items if necessary. The respondents did not suggest any modifications, which allowed us to have a final version of the PG-13-R in Persian.

To assess for test–retest reliability, a subset of participants ($n = 51$; 64.7% women) completed the scales 6 weeks later. Men ranged in age from 18 to 45 years ($M = 30.72 \pm 7.06$), and average PGD score ranged from 10 to 50 ($M_{PGD} = 28.1 \pm 9.43$). Women ranged in age from 22 to 50 years ($M = 32.27 \pm 6.08$), and average PGD score ranged from 10 to 50 ($M_{PGD} = 33.11 \pm 9.54$). This follow-up sample was younger than the baseline sample ($t = 4.29$, $p < 0.01$). No average PGD score differences were found. A written informed consent that described the objectives and procedures of the study was obtained from all participants, and anonymity was assured.

## Measures

### PG-13-R

The PG-13-R, an adapted version of the PG-13 scale, is designed to map onto these criteria (DSM PGD), using data from investigations conducted at Yale University ($N = 270$), Utrecht University ($N = 163$), and Oxford University ($N = 239$). The PG-13-R instrument contains 13 items, and these items (questions Q3 through Q12 in the PG-13-R) were rated using a 5-point Likert scale ranging from "1 = not at all" to "5 = overwhelmingly." In the PG-13-R, the symptom items are accompanied by 3 gatekeeper items exploring whether the respondent had lost a significant other (Q1), how long ago the death occurred (Q2), and impairment associated with the above symptoms (Q13). The PG-13-R grief symptoms have a unidimensional construct, with high degrees of internal consistency (Cronbach's alpha = 0.83, 0.90, and 0.93 for Yale, Utrecht, and Oxford, respectively) (Prigerson et al. 2021a).

### Patient health questionnaire-9

The Patient health questionnaire-9 (PHQ-9) (Kroenke et al. 2001) is a 9-item instrument designed for detecting major depressive disorder (MDD) based on the fourth version of the Diagnostic and Statistical Manual of Mental disorders (DSM-IV) (American Psychiatric Association 1994). The internal reliability of the PHQ-9 was excellent, with a Cronbach's $\alpha$ of 0.89 in the PHQ Primary Care Study (Kroenke et al. 2001). Scores are calculated based on how frequently a person experiences the mentioned feelings. In scoring, each "not at all" response is scored as 0; each "several days" response as 1; each "more than half the days" response as 2; and each "nearly every day" response as 3 (Kroenke et al. 2001). Therefore, scores range from 0 to 27 with higher scores indicating more severe MDD symptoms. The PHQ-9 has been validated for use among the Iranian population with a Cronbach's $\alpha$ of 0.856 (Farrahi et al. 2021).

### Work and Social Adjustment Scale

The Work and Social Adjustment Scale (WSAS) measures functional impairment. It consists of 5 items that assess impairment of daily functioning (work, home chores, social leisure, private leisure, and relationships) that are rated on a 9-point Likert scale from 0 (not at all impaired) to 8 (very severely impaired) (Mundt et al. 2002). The Persian version of the WSAS has good psychometric properties (Akbari 2017).

### PTSD checklist for DSM-5

PTSD symptoms were assessed using the PTSD Checklist for DSM-5 (PCL-5). Any participant whose PCL-5 reached the cutoff score was subjected to a clinical interview based on the DSM-5 criteria to make a definitive diagnosis (Blevins et al. 2015). The PCL-5 is a self-report measure consisting of 20 items, where each item reflected the severity of a particular symptom, rated on a 5-point Likert scale from 0 (not at all) to 4 (extremely) during the previous month. This questionnaire is not specific to a specific term and can be used in all disasters. It also has good validity and reliance in Iran (Sadeghi et al. 2016).

### Adult Hope Scale

The Adult Hope Scale (AHS) by Snyder was applied to test hope among participants. The scale contains 12 statements – 4 items are related to agency subscale, 4 items to pathways subscale, and remaining 4 are the buffers. Respondents mark their answers on an 8-point scale, where 1 signifies a completely false statement and 8 describes a completely true statement. The higher the general result (results from 2 subscales), the greater the hope level. The AHS displays an acceptable internal consistency rate in the original (Cronbach's $\alpha = 0.74–0.84$) and the Persian version (Cronbach's $\alpha = 0.82$), which is estimated based on research conducted among colleges. The original scale display correlation with related constructs such as basic hope, self-esteem, ability to cope with difficult situations, optimism (research among a group of the unemployed, Spearman's rho $= 0.39$), and self-efficacy (studies among high school students, Spearman's rho $= 0.36$) (Kermani et al. 2011).

### Data analysis

Data were collected using Google Forms. Data were analyzed using SPSS software V. 26 and Amos software V. 26. To assess the reliability by the mean inter-item correlations (MIIC), test–retest reliability, and internal consistency method, McDonald's $\omega$ and Cronbach's alpha were used, where values of $\alpha$ and $\omega > 0.80$ are adequate (Raykov and Hancock 2005), whereas the recommended range of MIIC is 0.15–0.50. McDonald's $\omega$ total is often regarded as a better alternative than Cronbach's alpha because it is based on factorial loads and is not influenced by sample size or number of items on the scale (Revelle and Condon 2018); also MIIC is not affected by the number of items as opposed to Cronbach's $\alpha$ and thus provides additional information. Concurrent validity of PG-13-R with the measures PHQ-9, WSAS, PCL-5, and AHS was assessed with Pearson's correlations. CFA was also used to determine construct validity using Amos software V. 26. To decide fitness of confirmatory model of the PG-13-R, chi-square/degrees of freedom (CMIN/DF), normal fit index (NFI), comparative fit index (CFI), adjusted goodness of fit index (AGFI), goodness of fit

**Table 1.** Sociodemographic characteristics of the participants

| Sociodemographics | N | % |
|---|---|---|
| **Gender** | | |
| Women | 209 | 60.2 |
| Men | 138 | 39.8 |
| **Age of bereaved** | | |
| 18–25 | 45 | 13.0 |
| 25–35 | 86 | 24.8 |
| 36–45 | 120 | 34.6 |
| 45–55 | 69 | 19.9 |
| 55–65 | 18 | 5.2 |
| More than 65 | 9 | 2.6 |
| **Education** | | |
| Lower than university | 143 | 41.2 |
| University | 204 | 58.8 |
| **Marital status** | | |
| Married | 218 | 62.8 |
| Single | 129 | 37.2 |
| **Deceased** | | |
| Mother | 64 | 18.4 |
| Father | 50 | 14.4 |
| Spouse | 69 | 19.9 |
| Sister | 62 | 17.9 |
| Brother | 42 | 12.1 |
| Child | 60 | 17.3 |
| **Cause of death** | | |
| Natural | 283 | 81.6 |
| Unnatural (suicide, accidents, or homicide) | 64 | 18.4 |
| **Time since loss** | | |
| 12–18 month | 95 | 27.4 |
| 18–24 | 131 | 37.8 |
| 24–36 | 121 | 34.9 |

index (GFI), and root mean square residual (RMSEA) values were used.

## Results

### Characteristics of the sample

The sample included 209 (60.2%) women and 133 (39.8%) men. Sociodemographic characteristics of the participants are summarized in Table 1. The participants' average PG-13-R score was 31.19 (SD = 10.27), and the score range was 10–50. The mean item score was 3.1 (SD = 0.53). The mean score for each symptom item showed that on a group level, the participants scored higher on the item assessing "yearning" and second highest on "intense emotional pain." The lowest score was on "difficulty with reintegration" and the second lowest score was on "avoidance."

### Confirmatory factor analysis

A preliminary screening of the data suggested that all of the PG-13-R items were suitable for factor analysis (Tabachnick and Fidell 2001). Specifically, the data did not exhibit issues pertaining to sample size, missing data, nonnormality, multicollinearity, or singularity. Moreover, the correlation matrices were deemed factorable (Bartlett's test of sphericity = $p < 0.001$; Kaiser–Meyer–Olkin test = 0.930). Acceptable limits of these fit indices can be summarized as follows: CMIN/DF ≤ 5 (Marsh and Hocevar 1988), GFI ≥ 0.90, AGFI ≥ 0.90 (Shevlin and Miles 1998), CFI ≥ 0.90 (Hu and Bentler 1999), NFI ≥ 0.90 (Bentler and Bonett 1980), and RMSEA ≤ 0.08 (Hooper et al. 2008). The confirmatory model of the PG-13-R was evaluated by using these criteria. A CFA was performed to confirm factor structure of the Persian PG-13-R. It was found that the fit indices were CMIN/DF = 3.39, GFI = 0.94, AGFI = 0.90, NFI = 0.95, IFI = 0.95, CFI = 0.95, and RMSEA = 0.08. These values showed that almost all model fit indices were within acceptable limits. Therefore, it can be inferred that one factor of the Persian version of the PG-13-R was supported.

### Reliability

To assess the reliability of the PG-13-R Persian, the reliability of test–retest and item–total correlation and McDonald's ω and Cronbach's alpha and MIIC were used. The MIIC was 0.56 (range 0.19–0.79), which is very good and was highest between items 9 (meaningless) and 10 (loneliness) (0.79) and second highest between items 7 (difficulty with reintegration) and 8 (emotional numbness) (0.76). MIIC was lowest between items 1 (yearning) and 5 (avoidance) (0.19) and second lowest between items 1 (yearning) and 8 (emotional numbness) (0.28). The McDonald's ω (0.93) and the Cronbach's alpha (0.93) of the current Persian version of PG-13-R were excellent. None of items negatively affected the consistency of the entire scale (Table 2). The item–total correlation test score is, in general terms, expected to be greater than 0.20 and not to be negative (Gökler Danışman et al. 2017). The analysis revealed that item 1 had the lowest correlation with the total score ($r = 0.45$), and the correlations of the other items with the total score ranged between 0.51 and 0.85 (Table 2). For the test–retest reliability of the PG-13-R, we used data from 51 volunteers who completed the follow-up survey for this purpose, with an interval of 6 weeks. The test–retest correlation for the scale was 0.89. This is in line with the results of the factor analysis that all items of PG-13-R are good indicators of the underlying construct, that is, prolonged grief.

### Concurrent validity

The concurrent validity of PG-13-R was assessed in relation to other measures, and statistically significant correlations were found with all of them. The correlation between PG-13-R and PCL-5, PHQ-9, WSAS, and AHS were found to be 0.56, 0.66, 0.72, and −0.36 ($p < 0.001$), respectively. These findings supported the concurrent validity of the PG-13-R.

### Known-groups validity

The results showed that people who were relatively less educated, more recently bereaved, and lost a spouse or child (vs. other relative or close person) due to suicide, accidents, or homicide (vs. natural causes) reported significantly higher summed scores on items

**Table 2.** Reliability of the PG-13-R

| Item | Item–total correlation | Cronbach's $\alpha$ if item deleted |
|---|---|---|
| 3 | 0.450 | 0.933 |
| 4 | 0.752 | 0.920 |
| 5 | 0.819 | 0.916 |
| 6 | 0.754 | 0.920 |
| 7 | 0.512 | 0.934 |
| 8 | 0.770 | 0.919 |
| 9 | 0.790 | 0.918 |
| 10 | 0.793 | 0.918 |
| 11 | 0.849 | 0.915 |
| 12 | 0.756 | 0.920 |

**Table 3.** Sociodemographic and loss-related correlates of disturbed grief

| | PGD, *M* (SD) | Test statistic |
|---|---|---|
| Gender | | $t = -5.77$[**] |
| Men | 27.44 (9.95) | |
| Women | 33.66 (9.74) | |
| Education level | | $t = 4.27$[**] |
| Low | 35.63 (9.41) | |
| High | 29.40 (10.16) | |
| Relationship to the deceased (deceased is …) | | $t = -3.28$[**] |
| Other than spouse/child | 28.78 (10.08) | |
| Spouse/child | 35.24 (9.82) | |
| Cause of death | | $t = -4.86$[**] |
| Natural | 29.96 (9.99) | |
| Unnatural | 36.65 (9.79) | |

[**]$p < 0.01$.

measuring PG-13-R. Women reported higher PG-13-R scores than men (see Table 3).

## Discussion

The purpose of this study was to investigate the psychometric properties of the Persian version of the PG-13-R so that researchers have access to a valid scale for examining prolonged grief in the Iranian population. For this purpose, this scale examined CFA, concurrent validity, internal consistency, MIIC, and test–retest reliability. This study has demonstrated that the Persian version of the PG-13-R is a reliable and valid measurement tool that can be used to measure PGD in bereaved adults in Iranian culture.

The internal consistency reliability for the Persian version of the PG-13-R was found to be excellent when assessed by Cronbach's alpha (0.93); it was not necessary to remove any items to improve the scale's consistency. This is in line with studies from other countries (Pohlkamp et al. 2018; Prigerson et al. 2021a; Sveen et al. 2020). Although Omega alpha total is often regarded as a better alternative than Cronbach's alpha (Revelle and Condon 2018; Nasri et al. 2023), it produced the same results in the present study (0.93).

All the coefficients yielded by the item–total correlation analyses are above the minimum values and statistically significant. The test–retest reliability method was used to obtain the stability of the scores over time. The results showed that the correlation coefficient between the 2 performances over a 6-week interval was 0.89, which was significant ($p < 0.01$). Consequently, the Persian version of the PG-13-R is desirable from the test–retest reliability. In general, the Persian PG-13-R possessed adequate internal consistency and mean inter-item correlations as well as temporal stability at both the scale and item levels; the results align with the bereaved Swedish parents' data (Pohlkamp et al. 2018), the Swedish version in a bereaved mixed trauma sample (Sveen et al. 2020), the original version (Yale University, Utrecht University, and Oxford University) (Prigerson et al. 2021a) and the Turkish version (Işıklı et al. 2022).

The results related to constructing validity also showed that the one-factor structure has an acceptable fit. These findings support the results of studies demonstrating the single factor structure of the PG-13-R measure. In previous studies of different samples with versions of the PG-13 in different languages, the PG-13 was shown to have a one-factor structure (Delalibera et al. 2011; He et al. 2014; Işıklı et al. 2022; Pohlkamp et al. 2018).

The PHQ-9, WSAS, PCL-5, and AHS were used to evaluate the concurrent validity in this study. The results showed that the PG-13-R had a positive and significant correlation with the PHQ-9, WSAS, and PCL-5, also the PG-13-R, had a negative and significant correlation with AHS. This moderate to high correlation of the total score of the PG-13-R with the symptoms of PTSD, depression, and functional impairment (work, home chores, social leisure, private leisure, and relationships) is consistent with previous findings (Pohlkamp et al. 2018; Prigerson et al. 2021a; Sveen et al. 2020; Ashouri et al. 2023). This also indicates that prolonged grief overlaps with depression but is distinct from the disorder; this finding is consistent with other studies (Spuij et al. 2012; Thimm et al. 2019; Yousefi et al. 2022). Boelen et al. (2010) examined the symptoms of PGD, depression, and PTSD and found that PGD is a distinct clinical entity (Boelen et al. 2010; Pohlkamp et al. 2018). According to Friedman (2012) and others, it is sometimes hard to tell the difference between grief and depression, since many symptoms such as sadness, tearfulness, insomnia, and decreased appetite are similar. Noticeable differences, however, are low self-esteem or feelings of worthlessness, both well-known distinctive symptoms of depression. The explicit and persistent suicidal ideation typical of major depression is uncommon in grief, although bereaved persons may sometimes in their yearning fantasize about being reunited with a lost loved one through death (Friedman 2012; Pohlkamp et al. 2018). PGD and PTSD share similarities (e.g., both are triggered by a stressful life event and are thought to result from a failure of memory integration) (Maercker and Znoj 2010; Smith and Ehlers 2021). However, there are also clear clinical differences such as the range of emotions prompted by the disorder (i.e., fear, shame for PTSD, and yearning for PGD; with guilt, sadness, and anger common in both) and the presence or absence of hyperarousal (i.e., common in PTSD but not PGD) (Duffy and Wild 2017; Smith and Ehlers 2021; Ashouri et al. 2023). According to the results, hope was negatively correlated with prolonged grief, indicating that people with lower hope experience more severe symptoms of prolonged grief. Studies have shown that the higher a person's level of optimism, hope, and belief in self-efficacy, the milder the symptoms of prolonged grief. Therefore, having positive beliefs about the future can help adjust to absence. Feeling efficient in the face of daily challenges without a deceased and having a positive outlook

on the future makes it possible to discover new goals in life and hope. Commitment to their realization can help the bereaved person to focus less on a lasting loss (Ludwikowska-Świeboda and Lachowska 2019; Yousefi et al. 2022; Ashouri et al. 2023). The results of known-group validity indicated that having lower levels of education, losing a child/spouse (in comparison with other relationship), being a woman, and dying an unnatural death (vs. dying a natural death) are correlated with higher levels of disturbed grief. These findings are in line with both other similar studies and those specifying the risk factors of PGD (Lenferink et al. 2022; Ashouri et al. 2023).

Although the PG-13-R scale of assessment was originally intended for post-death grief, it has recently been used in the detection of pre-death grief among caregivers of dependants with cancer as well as those with dementia (Coelho et al. 2017; Dehpour and Koffman 2022; Kiely et al. 2008; Liew 2016). It is vital to understand and detect pre- and post-death prolonged grief in family members of those who have died of chronic diseases. On the same note, longitudinal studies in dementia caregivers have indicated that high levels of grief amplify the effect of caregivers' burden on caregivers' depression (Dehpour and Koffman 2022; Liew et al. 2019). Therefore, it is important to identify potential candidates or cases of prolonged grief among family members of those who have died of chronic diseases using reliable and valid assessment tools to identify those most at risk. The consequences of not doing this mean that its symptoms may not be recognized or diagnosed correctly. Consequently, they fail to be treated or are treated with general or ineffective interventions (Caycho-Rodríguez et al. 2021).

Finally, as with other studies, this study has its limitations. First, the sampling was done using a convenience sample, which weakens the generalizability of the findings. Second, the study was conducted using self-report questionnaires and online (WhatsApp, Instagram, Telegram, and Facebook), which may have led to a bias of respondents. Third, only self-report scales were used to measure concurrent validity so that the results may be affected by the effect of the method. Since this study was performed on the general population, it is suggested that clinical samples be used to achieve the cutoff points of this scale in the Iranian population in future studies. However, it is the first study to examine the psychometric properties of PG-13-R in a Iranian culture. Other strengths include the essentially equal gender distribution among responders and including a large, community-based sample of bereaved relatives of the deceased, the restriction of the time elapsed after the loss, that the relationship to the deceased is immediate relatives of the bereaved.

## Conclusion

The Persian PG-13-R is a valid and reliable instrument for assessing symptoms of PGD among Persian bereaved adults. The associations between the PG-13-R total score, the level of self-reported symptoms of depression, functional impairment, and PTSD provided evidence in support of the instrument's concurrent validity. Finally, we believe that PG-13-R is a measurement tool that can be used clinically to monitor treatment effects of bereaved individuals with PGD in Iran.

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