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ORIGINAL ARTICLE

## Translation and validation of the Perinatal Grief Scale in a sample of Greek women with perinatal loss during the 1st and 2nd trimester of pregnancy

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### ABSTRACT

**Objective:** To translate and validate the Perinatal Grief Scale (PGS) (short version) in a sample of Greek women with perinatal loss during the first and second trimester of pregnancy.

**Methods:** One hundred seventy-six women were approached a few hours after the loss. Along with the PGS, three more questionnaires were completed: the Edinburgh Postnatal Depression Scale (EPDS), the Hospital Anxiety and Depression Scale (HADS) and the State-Trait Anxiety Inventory (STAI), in order to assess the convergent validity of the PGS.

**Results:** Total sample mean age was 34.1 years (SD = 5.2). Mean values and Cronbach's alpha coefficients for PGS subscales exceeded the minimum reliability standard of 0.70. Mean score for "Active grief" was 31.47 (SD = 9.31), for "Difficulty Coping" was 23.13 (SD = 7.54) and for "Despair" was 21.07 (SD = 7.07). By applying Pearson's correlation coefficients, PGS subscales positively correlated with scores on EPDS, STAI and HADS.

**Conclusions:** The PGS Greek version is a reliable instrument in terms of internal consistency and the Cronbach's alpha coefficients are high. The Greek version of PGS can be a useful instrument for the detection of the psychological impact after a perinatal loss and it has implications for both scientific research and clinical routine.

### ARTICLE HISTORY

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### KEYWORDS

Perinatal loss; grief; translation; validation; Perinatal Grief Scale

### Introduction

Pregnancy loss, including miscarriage, induced termination of pregnancy and stillbirth, is a very laborious process on a physical and psychological level. It is likely to lead to such a traumatic experience for the woman to even cause the onset of intense psychological responses [1–3]. It affects ~15–20% of women in the first trimester. The overall prevalence is 15–27% for women aged between 25 and 29, increasing to 75% in women older than 45 years [4]. Stillbirth, or the loss of a pregnancy prior to delivery after the 20th week (USA) or 24th week (UK) of gestation due to natural causes, is estimated to occur in nearly 1 in 200 pregnancies [1].

Although, many longitudinal studies, mainly from the USA and UK, have repeatedly confirmed the negative impact of perinatal loss on pregnant women [2,5,6], in Greece there is a lack of research in

that area. The absence of a validated instrument for perinatal loss in the Greek population emerged the need for translation and validation of the Perinatal Grief Scale (PGS) into the Greek language, in order to measure the impact after a perinatal loss during pregnancy. The PGS has provided researchers in different countries with a standard measure to assess grief, following a variety of types of pregnancy loss. It has been translated and validated in many countries so far such as Sweden, Czech Republic and China [7–9].

The short version of the PGS has been used in a number of studies over the last 30 years [10]. It is a 33-item questionnaire, easy to complete, that was constructed especially for women undergoing a perinatal loss. It consists of three subscales; each subscale consists of 11 items: the first subscale, "Active Grief", includes items regarding sadness, missing the baby and crying for the baby. The second subscale, "Difficulty Coping", includes items suggesting difficulty

in dealing with normal activities and with other people; it appears to indicate withdrawal and depression. The third subscale, "Despair", represents feelings of worthlessness and hopelessness. The total scale consists of 33 items with a possible range of 33–165. The three subscales consist of the sum of the scores of 11 items each, with a possible range of 11–55 [11]. A total score above 91 indicates a high degree of grief [10].

In this study, we aimed to translate and validate the PGS (short version) in a sample of Greek women with perinatal loss during the first and second trimester of pregnancy.

## Methods

### Sample characteristics

The settings of the study were two Maternity Hospitals (one public and one private) in the city of Athens. Each of these units serves not only Athens but also a great proportion of the Greek countryside and, therefore, the sample represents the Greek population as a whole [12]. The study was conducted from March 2014 to January 2016.

The criteria of inclusion were: (1) above 18 years of age, (2) able to read and write in Greek language, (3) single pregnancy and (4) participants were unknown to the researcher.

Demographic data, as well as maternal and pregnancy history were recorded. The translated, culturally adapted versions of the scales EPDS, the State-Trait Anxiety Inventory (STAI) and HADS, as well as the PGS Greek version were administered.

Before participation in the study, women had the chance to discuss any concerns regarding their loss and they were informed verbally and then in written about the aim of the study in a private room, as privacy can affect accuracy of the data collection [13]. The participants were encouraged to be sincere about their feelings. If they agreed to participate, they signed the informed consent and completed the questionnaires. All participants were informed verbally and in written that they were free to withdraw at any time during the study.

Finally, 190 participants were identified and recruited. The non-response rate was 9%, due to refusal of the women to participate in the study. The final sample included 176 women, which was adequate for an accurate confirmatory factor analysis (CFA). In the majority of studies, researchers performed analyses with subject to item ratios of 10:1 or less, which is an early and still prevalent rule-of-thumb many researchers use for determining *a priori* sample

size [14]. In our study the ratio was five participants per item.

### Translation of the instrument

The PGS short version was first published by Potvin et al. in 1988 [15]. Before the conduct of the back-translation, permission has been taken from Lori J. Toedter, one of the authors of PGS. The translation process is in accordance with the international methodological recommendations for the linguistic and cultural adaptation of health related quality of life (QoL) measures [16]. The researcher, who first translated the PGS in Greek, is a midwife, who is fluent in the two languages and has lived and studied for four years in the UK. A bilingual expert panel consisted of an Associated Professor in Psychiatry and a psychologist, PhD holder in the field of perinatal loss, so that the questionnaire could appropriately be modified in aspects of grammar, linguistics and cultural differences. Although there was a consensus in the three versions, item one has been slightly altered, in order to minimize misunderstandings concerning terminology. Finally, the Greek version of the scale was translated back to English, by a female professional translator in English. The Greek translation was considered to be correct and equivalent to the English version.

A pilot study was conducted to ensure that the questionnaire was valid and reliable. The participants were 10 women with different demographic characteristics, who had a perinatal loss at any stage of their pregnancy. The questionnaire of the pilot study was completed and afterwards the participants were asked about any word or expression that they found difficult to understand or offensive. No alteration has been made in the Greek version. SPSS version 19.0 (SPSS Inc., Chicago, IL) was used to perform the statistical analysis of the pilot study.

## Measures

### Instruments

In order to validate the Greek version of PGS, we have used three other instruments to assess the concurrent validity of the PGS. All these instruments have been previously validated for the Greek population showing good reliability and validity.

### Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale (EPDS) is a 10-item self-report scale that was developed to identify women at risk for perinatal depression [17].

The Greek version of the EPDS [18] that is used in the study is a valid and reliable instrument for the detection of postnatal depression. The cutoff point 11/12 for the use of the scale by clinicians is optimal, in order to detect postpartum depression.

### *State-Trait Anxiety Inventory (STAI)*

The STAI is a self-administered questionnaire that is used to diagnose trait and state anxiety [19]. It has 20 items for assessing trait anxiety and 20 for state anxiety. All items are rated on a 4-point scale. Scores for each subscale range from 20 to 80 and high scores are indicative of greater anxiety. The Greek translation of the STAI-form Y that has been used in this study is both reliable and valid, with psychometric properties close to those reported in the international literature [20].

### *Hospital Anxiety and Depression Scale (HADS)*

The Hospital Anxiety and Depression Scale (HADS) is commonly used by doctors to determine the levels of anxiety and depression in patients [21]. The HADS is a 14-item scale. Seven of the items relate to anxiety and seven relate to depression. Each item on the questionnaire is scored from 0 to 3 and can score between 0 and 21 for either anxiety or depression. The systematic review of Bjelland et al. [22] identified a cutoff point of 8/21 for anxiety or depression. The validated Greek version of the HADS that is used in the study showed good psychometric properties, in order to assess anxiety and depression in general hospital patients [23].

### *Perinatal grief scale (PGS)*

The short version of the PGS is a 33-item scale focusing on grief after perinatal loss [15]. The PGS has been used for all types of pregnancy loss. The three subscales are: "Active grief", "Difficulty in coping" and "Despair". Each subscale has 11-items. Each item is answered on a Likert scale, ranged from 1 to 5. The minimum value on each subscale is 11 and the maximum 55. The sum of all three subscales in PGS ranged between 33 and 165 [11]. Higher scores reflect higher levels of grief [24].

## **Procedure**

### *Ethics*

This study was conducted according to the ethical guidelines of the Declaration of Helsinki [25]. Approval for the research was obtained from the Clinical Research Ethics Committee of the University and the

Private Maternity Hospital. A consent form and an information sheet were attached with the questionnaires, which informed the participants about the aim of the study, commitment for confidentiality and anonymity, the right to withdraw and contact information.

### *Statistical analysis*

Continuous variables are presented with mean and standard deviation (SD) or with median and interquartile range (IQR). Quantitative variables are presented with absolute and relative frequencies. A CFA with maximum likelihood procedure was conducted in order to test how well the PGS model fits the data. The variance of the latent constructs was fixed at one during parameter estimation and the factors were allowed to be correlated. The fit of the CFA model was assessed using the chi square ( $\chi^2$ ), the comparative fit index (CFI), the goodness of fit index (GFI) and the root mean square error of approximation (RMSEA) [26]. For the CFI and GFI indices, values close to or greater than 0.95 are taken to reflect a good fit to the data [27]. RMSEA values of less than 0.05 indicate a good fit and values as high as 0.08 indicate a reasonable fit [27]. Scale internal consistency reliability was determined by the calculation of Cronbach's  $\alpha$  coefficient. Scales with reliabilities equal to or greater than 0.70 were considered acceptable. Validity was further examined with the correlations (Pearson's  $r$ ) of PGS dimensions with the STAI, HADS and EPDS scales. Correlation coefficient between 0.1 and 0.3 are considered low, between 0.31 and 0.5 moderate and over 0.5 high. Differences on PGS scales between two groups were evaluated by the use of Student's  $t$ -test, while differences between more than two groups were evaluated by analysis of variance (ANOVA). In order to control for multiple testing Bonferroni correction was used in ANOVA. Spearman correlation coefficient was used to explore the association of PGS scales with gestational age at termination, etiology of termination and number of previous miscarriages.  $p$  Values reported are two-tailed. Statistical significant level was set at 0.05 and analysis was conducted, by using SPSS and AMOS (SPSS Inc., Chicago, IL) Statistical Software.

## **Results**

### *Sample*

Data from 176 women were analyzed. Sample characteristics are shown in Table 1. Total sample mean age was 34.1 (SD = 5.2). Most of the participants were married (92%). The median number of previous

**Table 1.** Sample characteristics.

No. of previous pregnancies, median (IQR)	1 (0–2)
No. of previous miscarriages, median (IQR)	0 (0–1)
Conception	
Natural	162 (92.0)
Assisted (IVF)	14 (8.0)
Gestational age (weeks)	
≤12	105 (59.7)
>12	71 (40.3)
Gestational age (weeks), mean (SD)	12.5 (6.7)
Etiology of termination	
1st trimester miscarriage	92 (52.3)
Chromosomal abnormality	30 (17.0)
Congenital abnormality	19 (10.8)
2nd trimester miscarriage	35 (19.9)

**Table 2.** Descriptive statistics of PGS subscales and Cronbach's alpha coefficients.

	Minimum	Maximum	Mean	SD	Cronbach's alpha
Active grief	11.00	51.00	31.47	9.31	0.90
Difficulty coping	11.00	41.00	23.13	7.54	0.82
Despair	11.00	41.00	21.07	7.07	0.88

pregnancies was one and 60 women (34.0%) had a previous miscarriage.

### Internal consistency reliability

Mean values and Cronbach's alpha coefficients for PGS scales are presented in Table 2. All the scales of PGS exceeded the minimum reliability standard of 0.70. Mean score for "Active grief" was 31.47 (SD = 9.31), for "Difficulty Coping" was 23.13 (SD = 7.54) and for "Despair" was 21.07 (SD = 7.07).

### Results from CFA

As defined from the results of CFA the 3-dimensional model fitted the data well. The RMSEA, CFI and GFI values were 0.054, 0.953 and 0.931, respectively. None of the item cross loadings exceeded the item loadings on the intended latent construct. Factors loadings were high and ranged from 0.61 to 0.88, indicating a strong association between the latent factors and their respective items.

### Convergent validity

Pearson's correlation coefficients between PGS subscales and scores on EPDS, STAI and HADS are presented in Table 3. A statistically significant positive correlation was found between PGS subscales and scores on EPDS, STAI and HADS. Thus, more symptoms of perinatal grief are associated with more symptoms of depression. Similarly, more symptoms of temporary and permanent anxiety were associated with more

**Table 3.** Correlations of PGS with STAI, HADS and EPDS scales.

	Active grief	Difficulty coping	Despair
EPDS score	0.48	0.53	0.43
STATE score	0.57	0.61	0.47
TRAIT score	0.34	0.47	0.43
Depression score (HADS)	0.50	0.65	0.48
Anxiety score (HADS)	0.34	0.51	0.41

All coefficients had  $p < 0.001$ .

symptoms of perinatal grief. Also, more symptoms of depression or anxiety based on HADS scale were associated with more symptoms of perinatal grief.

### Discussion

The aim of this study was to translate and validate the short version of PGS, in order to enable researchers and clinicians to measure women's reactions following perinatal loss. The results suggested that the Greek version of PGS is a reliable and valid instrument to assess the three dimensions of grief after a perinatal loss: "Active Grief", "Despair" and "Difficulty Coping". The PGS Greek version is a reliable instrument in terms of internal consistency and the Cronbach's alpha coefficients are high, based on our research and other studies [7,8]. In terms of convergent validity, Pearson's correlation coefficients showed a significantly positive correlation between PGS subscales and scores on EPDS, STAI and HADS. Therefore, more symptoms of perinatal grief are associated with more symptoms of depression and anxiety.

There is an association of PGS with gestational age at termination and etiology of termination. Scores on all PGS dimensions were significantly greater, when the gestational age at termination was more than 12 weeks. In pregnancies with gestational age ≤12 weeks, "Active Grief" was 28.82 (SD 8.78), "Despair" 21.01 (SD 6.55) and "Difficulty Coping" 19.73 (SD 5.80). In pregnancies with gestational age >12 weeks, "Active Grief" was 35.13 (SD 8.80) "Despair" 26.16 (SD 7.86) and "Difficulty Coping" 22.89 (SD 8.19). Davies et al. [5], demonstrated that second trimester termination is more stressful, compared to first trimester. In second trimester, mothers have experienced fetal movements and the termination involves an induction of labor, whereas first trimester termination mothers have not experienced fetal movements and the termination is under general anesthesia [5]. The studies of Korenromp et al. [28] and Lasker and Toedter [29] also supported that advanced gestational age is associated with significantly higher scores for grief.

Additionally, all PGS dimensions displayed significantly greater scores in cases of chromosomal

abnormality ["Active Grief" 36.23 (SD 8.89) "Despair" 26.1 (SD 9.13) and "Difficulty Coping" 23.53 (SD 8.5)] or second trimester miscarriage ["Active Grief" 36.37 (SD 7.73) "Despair" 26.59 (SD 6.01) and "Difficulty Coping" 23.71 (SD 8.06)], as compared with cases that had first trimester miscarriage ["Active Grief" 28.09 (SD 9.05) "Despair" 20.64 (SD 6.73) and "Difficulty Coping" 19.08 (SD 5.67)]. As mentioned above, second trimester termination is more stressful, compared to first trimester [5] and is associated with significant higher scores for grief [28,29]. Regarding the psychological outcomes in women having termination due to chromosomal abnormality, many studies have similar results [5,28,30], mainly because guilt over the decision has an effect on grief symptomatology, usually leading to particularly high scores in all PGS dimensions.

One limitation of the study is that the sample selection was limited to women who had a perinatal loss up to 26 weeks. In this study, that lasted two years, questionnaires were administered to nine women who had experienced a perinatal loss after 28 weeks. However, three of them declined to participate and six of the participants who consented, were excluded, because the sample size was too small to extract any representative measurements. Another limitation is that, we did not take our sample from maternity hospitals all over Greece, but from two Maternity Hospitals (one public and one private) in the city of Athens. However, in Athens lives approximately half of the Greek population and each of these units serve not only Athens, but also a great proportion of the Greek rural areas, giving a relatively homogeneous cultural background of Greeks.

Perinatal loss has a negative psychological impact on the life of women and their families. As mentioned above, there is a lack of research in this field in Greece. The Greek version of PGS can be a useful instrument for the detection of psychological impact after a perinatal loss and it has implications for both scientific research and clinical routine. It offers great advantages, compared to other instruments that measure depression and anxiety, as it specifically focuses on dimensions concerning a perinatal loss.

### Disclosure statement

The authors report no declarations of interest.

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