Depression Stigma Scale in the Portuguese population: psychometric properties and construct validation

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Abstract

Currently, in Portugal, there is a lack of validated scales to measure depression stigma; therefore, validation of the Depression Stigma Scale (DSS) is an essential step to the depression stigma research in Portugal. The sample was collected as part of the OSPI program – Optimising suicide prevention programs and their implementation in Europe, specifically within the application in Portugal, and 1693 participants were included. Floor-ceiling effects and response ranges were analysed, and we calculated Cronbach alphas, conducted a Principal Component Analysis, and Confirmatory Analysis. Construct validity was tested with two well documented hypotheses, using data on gender and depression symptoms. The sample was well comparable with the Portuguese general population, indicating its representativeness. A three-factor structure was identified in each subscale (personal and perceived stigma): weak-not-sick, discrimination, and, dangerous/unpredictable. The Cronbach’s alphas were satisfactory and construct validity was confirmed. The scale showed good psychometric properties in our sample. More research is needed to test the convergent validity.
Keywords: Personal stigma, perceived stigma, stigma scale, Portuguese population

1. Introduction

The stigma associated with mental illnesses was the subject of extensive study in recent years. Two relevant concepts of stigma are social and self-stigma. Harmful attitudes and discriminatory behaviour towards people with mental illness characterise social stigma (Corrigan, 2006). The internalisation of stigmatising beliefs typifies self-stigma by the person living with mental illness (Corrigan et al., 2004) which often causes deep feelings of shame and guilt and may compromise the help-seeking and treatment process (Rusch et al., 2005). Many of the recent research has been focusing on two types of social stigma: personal stigma and perceived stigma (Griffiths et al., 2008). Personal stigma refers to one’s own beliefs about depression, and perceived stigma refers to one’s beliefs about the attitudes of others.

The apparent adverse effects of mental illness stigma described in the literature, such as the reinforcement of some pathological symptoms such as lack of self-esteem and social isolation (Lasalvia et al., 2013), constraints on professional integration and access to mental health care (Rusch et al., 2005) have driven the stigma research from the general concept of mental illness to the specific stigma attributed to a particular diagnosis.

Stigma is one of the most significant constraints on people living with depression with the community and institutional stigmatised responses similar to those experienced by people with psychosis or chronic mental illness (McNair et al., 2002). A study form 2013 showed that 79% of the participants had experienced discrimination associated with their depressed condition and between 20% and 37% of the participants have compromised their actions because of anticipated discrimination (Lasalvia et al., 2013). Within people with common mental disorders in Europe, there is a 14.8% of both embarrassment and discrimination experiences, being more common among individuals with lower education, and those married (Alonso et al., 2009).

In 2015, the estimated prevalence of depression worldwide was 4.4% (World Health Organization, 2017). In contrast, in Portugal the prevalence in the same year was estimated in 5.7% and is responsible for 8.5% of the total Years Lived with Disability
(World Health Organization, 2017), raising the importance of depression stigma research.

Currently, in Portugal, there is a lack of validated scales to measure depression stigma; therefore validation of the Depression Stigma Scale (Griffiths et al., 2004) is an essential step to the depression stigma research in Portugal.

The Depression Stigma Scale was developed by the Centre for Mental Health Research at the Australian National University to measure stigma associated with depression. It has two subscales which measure two different types of stigma: personal and perceived. The Personal Stigma Subscale measures stigma in the respondent’s attitudes towards depression by asking them to indicate how strongly they agree with nine statements about depression. The Perceived Stigma Subscale measures the respondent’s perception about the attitudes of others towards depression by asking them to indicate what they think most other people believe about the same nine statements. Measurement of responses to each item are on a five-point scale (ranging from zero ‘strongly disagree’ to four ‘strongly agree’). Higher scores indicate higher levels of depression stigma.

2. Methods

2.1 Participants and Procedures

The sample collection for this study was part of the OSPI program – Optimising suicide prevention programs and their implementation in Europe, specifically within the application in Portugal (Alonso et al., 2009; Kohls et al., 2017) and the current study assumed a cross-sectional study design.

In Portugal, a selection of participants was from the cable telephone network listed numbers, using the random digit dialling method to numbers belonging to Almada and Amadora municipalities. Trained interviewers conducted telephone contacts.

Almada and Amadora combined have above 350 000 inhabitants, being two of the most populous counties in Portugal. Due to its high urban population density, and the socio-economic diversity of its inhabitants, these municipalities were considered representative of the Portuguese population (Coppens et al., 2013; Hegerl et al., 2009).

Of the 2009 participants in the OSPI research program (Hegerl et al., 2009, Coppens et al., 2013), we excluded 316 participants from the current study due to their exposure to
the OSPI intervention which aimed to promote literacy on depression and, consequently, help-seeking behaviour. Collection of data occurred between 2009 and 2010.

2.2 Instruments

We asked participants to answer a questionnaire containing sociodemographic queries concerning the respondent’s sex, age, professional occupation, and the complete Depression Stigma Scale, as well as the Mental Health Inventory 5 (MHI-5) (Berwick et al., 1991; Pais-Ribeiro, 2001) in order to screen for depressive symptoms.

The Portuguese version’s translation and retroversion were executed independently by different experts: one depression expert was Portuguese native and fluent in English and did the translation; one professional linguistic expert was English native and fluent in Portuguese and retroverted the text. The final adjustment was decided by three Portuguese depression experts.

2.3 Data Analysis

In addition to computing a continuous score for each DSS, we transformed the DSS score into percentages, in accordance to the original scale (Griffiths et al., 2004), with higher percentages indicating greater stigma levels. The same procedure was carried out for the MHI-5 scale, transforming the score in a range between 0 and 100, the higher score meaning the better mental health.

In order to study the psychometric properties of the DSS, we analysed floor-ceiling effects and response ranges, calculated Cronbach alphas, conducted a principal component analysis, and tested the Model Fit using Confirmatory Analysis.

We tested construct validity using two of the better-documented hypotheses (Boerema et al., 2016; Busby Grant et al., 2016; Griffiths et al., 2008): (1) women present lower scores of personal stigma and higher perceived stigma than men and (2) depressive symptomatology is associated with higher personal and perceived stigma. We calculated means and standard deviations for continuous variables. Student t-tests were applied to examine the differences between sexes, and separate linear regression analyses used to
assess the effects of symptomatology and other factors on each depression stigma subscale, as well as Pearson correlations.

IBM SPSS Statistics, Version 24.0 software package was used to conduct statistical analysis, and IBM AMOS was used to conduct the Confirmatory Analysis.

2.3 Ethical Considerations

Trained interviewers explained in the first contact the objectives of the study and obtained verbal informed consent. Anonymity and confidentiality of the data collected were guaranteed.

The approval of the study protocol occurred in the scope of the OSPI program (Coppens et al., 2013; Kohls et al., 2017). In Portugal, the OSPI study was approved by the Medical Sciences Faculty of the New University of Lisbon’s ethics commission in May 2009.

3. Results

3.1 Sample description

As to gender and age, 53.6% were women, and the mean age was 47.2 years (SD=18.17, range 18-90). National data estimates a mean age in the Portuguese population of 45.2, with a gender distribution of 52.2% women and 47.8% men. We found 8.6% of unemployment in our sample, whereas in 2009 the unemployment rate in Portugal was 9.4%.

Most of the individuals on our sample was married (52.9%), followed by single individuals (33.2%), widowed (7.1%) and divorced (6.8%). The marital status of the Portuguese population follows a similar distribution: 54.8% are married, 30.1% single, 8.5% widow, and 6.6% divorced.

3.2 Depression Stigma Scale psychometric characteristics
As we can observe on Table 1, the KMO (Kaiser-Meyer-Olkin) test value is sufficiently close to 1, which indicates that the correlation patterns are relatively compact, so factorial analysis should produce factors other than reliability. The Bartlett test of sphericity shows that the correlation matrix is significantly different from the identity matrix, also confirming that it is appropriate to perform the factor analysis. There were no missing values, and we used all response options in all items. Besides, there were no evident inconsistencies in the frequency of responses, and no ceiling or floor effects were detected.

| Analysis                          | Indicators                                      | Results                                      |
|----------------------------------|------------------------------------------------|----------------------------------------------|
| **Principal component analysis** | Determinant, Kaiser-Meyer-Olkin, and Bartlett test. | **Total Scale**
| assumption verification          | Determinant: 0.22; KMO>0.75; Bartlett test p<0.01 | **Personal Subscale**
|                                  | Determinant: 0.27; KMO>0.70; Bartlett test p<0.01 | **Perceived Subscale**
|                                  | Determinant: 0.18; KMO>0.80; Bartlett test p<0.01 | **Sensitivity**
|                                  | Response frequencies, skewness and kurtosis     | Use of all response options and normal distribution of answers. No observation of a floor-ceiling effect. |
| **Factorial Validity**           | Loadings with Promax with Kaiser normalisation. (Eigenvalue above 1) | **Two dimensions: Personal and perceived subscales.** |
| **Reliability**                  | Cronbach’s Alpha                                | **Total scale: 0.75**
|                                  |                                                  | **Personal Subscale: 0.71**
|                                  |                                                  | **Perceived Subscale: 0.76** |
| **Model Fit Analysis**           | NFI, GFI, CFI and RMSEA                        | **NFI= 914 GFI= .967; CFI= 0.931; RMS= 0.046** |

Table 1: Depression Stigma Scale Portuguese version Psychometrics’ properties
As we expected the items to be correlated, we used the Promax rotation with the Kaiser normalisation. The criteria for the extraction was 50% of the total variance explained and eigenvalue higher than 1. With these criteria, we extracted two dimensions from the scale: the first nine items corresponding to the personal subscale, and the last nine items corresponding to the perceived subscale.

When analysing the subscales separately, both the eigenvalues (eigenvalues >1) and the scree plot suggested a three-factor solution of the personal depression stigma subscale and the remaining five items loaded >0.40, with no cross-loadings >0.20. The three factors accounted for 55.29% of the variance: 29.64% was explained by the first factor, 13.21% by the second and 12.44% by the third factor. The naming of the first and last factors was after Zhu and colleagues designation (Zhu et al., 2019): weak-not-seek in the first factor (items 1, 2, 3) and discrimination in the third factor (items 7, 8, 9). The second factor was labelled Dangerous/unpredictable, following Boerema and colleagues designation (Boerema et al., 2016), corresponding to items 4, 5, 6. Their correlation was 0.36 (p<0.001).

We identified the same factor solution in the perceived depression stigma subscale, with the three-factor solution accounting for 59.55% of the variance. In this case, the first factor (weak-not-seek, items 10, 11, 12) explained 11.31% of the variance, the second factor (Dangerous/unpredictable, items 13, 14, 15) explained 14.28% of the variance, and the third factor (discrimination, items 16, 17, 18) explained 33.96%. Their correlation was 0.38 (p<0.001).

We did not observe floor-ceiling effects. The percentage of participants endorsing each item ranged from 6-81% and 10-94% for the Personal and Perceived subscales respectively.

Both Subscales show good Cronbach’s Alphas that did not increase with the removal of any of the items.

The Confirmatory Factorial Analysis showed a Normal Fit Index (NFI) higher than 0.90, a Goodness of Fit Index (GFI) higher than 0.90, a Comparative Fit Index (CFI) higher than 0.93 and an RMSEA lower than 0.05.
3.3 Construct validity

In the personal stigma subscale, women presented a statistically lower mean score (M=38.29, SD=13.98) than men (M=41.02, SD=13.95), t(1691)=4.00, p<0.001. On the other hand, women obtained higher mean scores on the perceived subscale (M=56.53, SD=14.83) than men (M=55.38, SD=13.89). However, the difference was not significant (t(1691)=-1.64, p=0.10).

MHI-5 scores showed a negative correlation with the personal depression stigma (r=-0.07, p <0.01); still, the correlation with the perceived depression stigma subscale was not significant (r=0.02, p=0.30).

As we can see in table 2, we detected significant effects on personal stigma from gender, age and depressive symptomatology. Both age and being a man have positive effects on personal stigma, increasing their score. In the other hand, better MHI-5 scores, translating into better mental health, had a negative effect on personal depression stigma, decreasing the score.

Table 2: Effects of gender, age and MHI-5 on personal depression stigma scores

|        | B     | 95% CI     | t      | P     |
|--------|-------|------------|--------|-------|
| Woman  |       |            |        |       |
| Men    | 3.37  | 2.30, 4.65 | 26.87  | <0.001|
| Age    | 0.23  | 0.18, 0.27 | 165.52 | <0.001|
| MHI-5  | -0.10 | -0.17, -0.02 | 6.41  | <0.05 |

β=beta regression coefficients, Ref.=Reference category
Significant results shown in bold.

On the perceived depression stigma, gender, and age presented the opposite effect compared to the personal stigma: age and being a man decreased the perceived depression stigma score, as shown in table 3. MHI-5 scores did not produce a significant effect on perceived stigma scores.

Table 3: Effects of gender, age and MHI-5 on perceived depression stigma scores

|        | B     | 95% CI     | t      | P     |
|--------|-------|------------|--------|-------|
| Woman  |       |            |        |       |
| Men    | -1.46 | -2.82, -0.09 | 4.38  | <0.05 |
| Age    | -0.01 | -0.26, -0.08 | 30.04 | <0.001|
| MHI-5  | 0.03  | -0.05, 0.11 | 0.57  | 0.45  |

β=beta regression coefficients, Ref.=Reference category
Significant results shown in bold.
4. Discussion

The present study is the first to examine the Depression Stigma Scale (DSS) psychometric properties in the Portuguese population, which can be a significant step forward on the depression stigma research in Portugal.

Even though our sample presented a mean age five years older than the mean age of the Portuguese population, we can consider our sample representative due to the similarities on other sociodemographic characteristics, such as gender distribution, occupation and marital status.

Overall, the Portuguese version of the DSS showed good psychometric properties, suggesting that it was an appropriate instrument for use in future studies in the Portuguese population. Although, internal consistency in the perceived subscale was lower than that obtained in its original form (α=0.88) (Griffiths et al., 2004), and in the Dutch version (α=0.82) (Boerema et al., 2016), it was nevertheless satisfactory. Internal consistency for the personal subscale was similar to that reported in previous studies.

We confirmed each subscale as an individual dimension from the full scale, and all the items in each subscale presented good loadings. Additionally, and in similarity with the structure identified by Boerema and colleagues (Boerema et al., 2016), the scree plot of each subscale indicated a three-factor solution: weak-not-sick (items 1, 2 and 3 from the personal subscale and 10, 11 and 12 in the perceived subscale), dangerous/unpredictable (items 4, 5, 6 and 13, 14 and 15 form the personal and perceived subscale respectively) and lastly, discrimination (items 7, 8 and 9 in the personal subscale and 16, 17 and 18 in the perceived subscale). This structure showed good fit indices in the confirmatory factor analysis. This is a very interesting finding, since the scale structure seems to be influenced by cultural factors, ranging from a one-factor structure (Dardas et al., 2018) to a three-factor (Boerema et al., 2016).

In order to access the construct validity, we tested two well-documented hypotheses. The first one, widely observed in previous literature, stated that we expected to see women with lower personal stigma and higher perceived stigma than men. When analysing mean differences between genders, the difference between scores in the personal scale was clear: women showed lower personal stigma than men in agreement with the previous literature (Boerema et al., 2016; Busby Grant et al., 2016; Griffiths et al., 2008; Griffiths et al., 2004); however, no difference was observed in the perceived
depression stigma subscale. Differences in the perceived stigma have not been as consensual in the literature as the one observed in the personal stigma. In one hand we can find research that supports that women present higher perceived stigma than men (Busby Grant et al., 2016), in the other we find literature supporting the absence of differences (Pyne et al., 2004). Even though in the direct comparisons we found no statistically significant difference between genders in the perceived scale, in the regression, gender has shown to have a significant effect on perceived depression stigma scores, which can indicate that there are, in fact, gender differences, however subtle, and conditioned by other variables.

The second hypotheses led us to expect greater personal and perceived stigma in the population with the higher depressive symptoms. While, in our sample, we confirmed the hypotheses for personal stigma, in the perceived depression stigma, depressive symptoms did not show significant effects. We can hypothesise that perceived depression stigma can be more sensitive to other variables such as the proximity of the people participants are thinking when evaluating stigma around them (Jennings et al., 2015), and previous experiences of help-seeking and close ones living with depression (Cornally and McCarthy, 2011; Corrigan, 2006).

One limitation of this study is related to the data collection because interviews were carried out by phone, probably delivering some desirable social answers. Another limitation is the absence of convergent validity of the scale, and future research is needed to examine the convergent validity in the Portuguese population.

Nevertheless, the scale presented good psychometric properties in the Portuguese population, and its construct validity was confirmed. Considering the well-recognised adverse effects of stigma, development of many initiatives aimed to reduce depression stigma in the populations, the existence of a validated scale can be crucial in the evaluation of the effectiveness of the interventions. Also, access to a validated scale, allow us to explore better the depression stigma predictors as well as its effects on help-seeking and mental health promotion behaviours.

**Funding:** Funding for this study was provided by the European Community’s Seventh Framework Program (FP7/2007–2013) under grant agreement no. 223138. The funding agency had no role in the design of the study, nor in the data collection, nor the analyses
and interpretation of the data, nor in the writing of the manuscript, nor in the decision to submit the manuscript for publication.

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