TITLE PAGE (Original article)

Title: Development and psychometric testing of a scale for assessing the associative stigma of mental illness in nursing

A short running title: Scale for assessing the associative stigma

THE FULL DETAILS OF THE AUTHORS:

PhD Meritxell SASTRE-RUS

    meritxell.sastre@eug.es

    Professor. Escoles Universitaries Gimbernat. EUI Gimbernat . Universitat Autònoma de Barcelona, Sant Cugat del Vallès, Spain.

RN MSc PhD Joaquín TOMÁS-SÁBADO

    joaquin.tomas@eug.es

    Professor. Escoles Universitaries Gimbernat. EUI Gimbernat . Universitat Autònoma de Barcelona, Sant Cugat del Vallès, Spain

PhD Rocío JULIÁ-SANCHIS

    rjulia@ua.es

    Assistant professor. Nursing Department. Health Sciences Faculty, University of Alicante, UA. (Spain). In the School of Nursing. University of Barcelona, Spain.

RN MSc PhD Juan Francisco ROLDÁN-MERINO

    JRoldan@santjoandedeu.edu.es

    Professor, Department of Public Health, Mental Health and Maternal-Child Nursing.Campus Docent Sant Joan de Déu-Fundació Privada, School of Nursing, University of Barcelona, Spain

RN, PhD Montserrat PUIG-LLOBET

    monpuigllob@ub.edu

Professor, Department of Public Health, Mental Health and Maternal-Child Nursing, School of Nursing, University of Barcelona, Health Sciences Campus Bellvitge, L'Hospitalet de Llobregat, Barcelona,Spain).

RN MSc PhD M.Teresa LLUCH-CANUT

tlluch@ub.edu

Professor, Department of Public Health, Mental Health and Maternal-Child Nursing, School of Nursing, University of Barcelona, Health Sciences Campus Bellvitge, L'Hospitalet de Llobregat, Barcelona,Spain). Member of the Research Group GEIMAC. Consolidate Group 2014-1139 "Estudios de invarianza de los instrumentos de medida y análisis del cambio en los ámbitos social y de la salud".

AN AUTHORSHIP STATEMENT:

The five authors contributed to this work, doing substantial contributions to the conception, design, analysis and interpretation of data and drafting the work or revising it critically for important intellectual content.

FULL POSTAL AND EMAIL ADDRESS

PhD Meritxell SASTRE-RUS

meritxell.sastre@eug.es

Av. Generalitat, 202-206

08174 Sant Cugat del Vallés (Barcelona) Tel. 93 586 37 27

CONFLICT OF INTEREST STATEMENT

Authors declare any financial support or relationships that may pose conflict of interest.

All authors listed meet the authorship criteria according to the latest guidelines of the International Committee of Medical Journal Editors, and that all authors are in agreement with the manuscript.

FUNDING OR SOURCES OF SUPPORT

ETHICAL STATEMENTS

Undergraduates were informed of the aim of the study, the methods used and how they would participate. Prior to being included at the research, informed consent was obtained in writing. Confidentiality of respondents were respected. Participants were informed about the voluntariness of their participation

DR. MERITXELL SASTRE-RUS (Orcid ID : 0000-0002-7043-0706)

DR. JUAN ROLDÁN MERINO (Orcid ID : 0000-0002-7895-6083)

PROF. MONTSERRAT PUIG (Orcid ID : 0000-0002-3893-4488)

Development and psychometric testing of a scale for assessing the associative stigma of mental illness in nursing

ABSTRACT

Aim: To develop a new scale for assessing the associative stigma of mental illness in nursing based on Peplau's model of psychodynamic nursing and to examine its psychometric properties.

Background: The stigma of mental illness continues to cause problems today for patients, families, and mental health professionals. For individuals with a mental disorder, stigma can result in restricted opportunities, social exclusion, and the denial of rights. Associative stigma in mental health professionals is becoming a major problem and is related to increased depersonalisation, higher levels of emotional exhaustion, and diminished job satisfaction among mental health professionals. Nursing may play a key role in reducing the stigma associated with mental illness, but there are no specific scales for the measurement of associative stigma in nursing.

Design: Development of an instrument. A STROBE checklist was completed.

Methods: This study involved two stages: (1) item generation and content validation; (2) examining the reliability and convergent/discriminant validity of the scale. A developmental and methodological design was used. Data were collected between November 2016 and December 2017 from a sample of 737 nursing undergraduates.

Results: The results indicated good internal consistency for the final 20-item scale for assessing the associative stigma of mental illness in nursing, which is considered in terms of three dimensions: Violence/Dangerousness, Disability, and Irresponsibility/Lack of Competence. Exploratory and confirmatory factor analyses supported a three-factor structure consistent with the theoretical model.

Conclusions: The 20-item EVEPEM (from its Spanish acronym) derived from Peplau's theory was shown to be a valid and reliable tool for assessing the stigma of mental illness in the nursing setting.

Relevance to clinical practice: Reliable instruments are needed to measure the effectiveness of anti-stigma interventions for mental health professionals. The results indicate that the tool developed is a valid and reliable instrument for use in the nursing setting.

Key words: mental health, nursing, psychometrics, nursing models, mental health nursing.

Impact Statement

'What does this paper contribute to the wider global clinical community?'

- This scale may be used to develop future programmes to reduce the associative stigma of mental illness in nursing.
- This scale is able to measure the associative stigma of mental illness in nursing while considering its specific characteristics.

1. INTRODUCTION

Stigma has long been linked to mental illness and comprises different levels that interact with each another. *Structural* or *institutional stigma* is the result of discrimination that is inherent to legislation or the functioning of institutions (Corrigan et al., 2011). *Social* or *public stigma* refers to negative stereotypes and prejudices that generate fear and social exclusion and may become an obstacle to employment (Hipes et al., 2016). Stigmatised individuals with mental illness are seen as being different to the rest of their social group (Goffman, 1963), blameworthy and dangerous (Zartaloudi & Madianos, 2010). Individuals may also experience *internalised* or *self-stigma*, resulting in reduced self-esteem due to their perception of being socially unacceptable (Tucker et al., 2013).

Some researchers have also discussed other concepts of stigma (Cheng et al., 2019). For instance, *courtesy stigma* encompasses associative stigma when used in reference to informal carers' or formal carers' perceived stigma, whereas *affiliate stigma* is used to make a more explicit reference to internalised stigma (Chang et al., 2015). Both concepts can be found in the literature used virtually as synonyms (Cheng et al., 2019). Courtesy stigma has more connotations of dependency and morality between the two parties of a relationship in which stigmatisation occurs (Goffman, 1963). For this reason, we believe that associative stigma is a more specific concept that could be applied to health professionals. Other concepts can be found in the classification of types of stigma, such as provider-based stigma, which may be understood as the discrimination against stigmatised groups by the occupational groups that provide healthcare to these groups (Chang et al., 2018).

This study is focused on the concept of associative stigma, a more specific phenomenon that may affect individuals working in the field of mental health with different characteristics to the rest of their peers (Ben Natan et al., 2015). Associative stigma may affect both health professionals and informal caregivers (Park & Seo, 2016), leading them to perpetuate the cycle of exclusion in their clinical practice (Bates & Stickley, 2013) and, at times, to behave in ways that reflect the prejudices of society (Park & Seo, 2016).

Health-related stigma has specific illness- and culture-related characteristics. Health-related stigma is manifested through negative perceptions, attitudes, and behaviours. The negative attitudes exhibited by health professionals towards people with mental illnesses may affect patients' quality of life and the care provided to them (Riffel & Chen, 2020). In addition, the manifestations of these stigmatising attitudes on the part of health professionals

may become barriers to the provision of adequate services and care, and may hinder the rehabilitation and social integration of individuals with mental disorders (Rodríguez-Almagro et al., 2019).

These negative attitudes undermine the holistic ethos of mental health nursing (Delaney, 2012; Gaebel et al., 2015). Associative stigma has an impact on the job satisfaction of mental health nurses, affecting interpersonal care relations, the self-stigma of service users, and nurses' motivation to work in mental health (Sercu et al., 2015).

Interventions for reducing stigma are generally based on the three principles of contact, education, and protest (Watson & Corrigan, 2005), and have been incorporated into programmes aimed at improving the mental health of the population (Hankir et al., 2014).

Nevertheless, in recent years, efforts have focused on contact and education, because the literature has shown that protest might have negative effects on the general population (Corrigan et al., 2013).

However, an objective assessment of the effectiveness of these interventions requires instruments that are able to provide valid and reliable information about the extent of the changes that have occurred (Corrigan et al., 2014).

It is therefore important to have tools available to detect stigma and assess the effectiveness of interventions to eradicate associative stigma (Yanos et al., 2017).

2. BACKGROUND

A considerable number of measurement instruments have been developed to assess associative stigma among health professionals (Sastre-Rus, García-Lorenzo, Lluch-Canut, Tomás-Sábado, & Zabaleta-Del-Olmo, 2019) and there are reviews assessing the psychometric properties of instruments measuring mental health-related stigma (Brohan, Slade, Clement, & Thornicroft, 2010). However, to our knowledge, there are no instruments based on nursing models. Usually, in order to measure associative stigma in nursing, instruments are used which operate under broader conceptions of stigma.

Nurses play a specific role in the care of individuals with mental illnesses in collaboration with other mental health professionals. Their close and continuous contact with users of mental health services, coupled with their holistic approach to care, makes their relationship with patients different to those which patients have with other professionals.

The existing scales for assessing stigma do not take into consideration these dimensions of care (Yanos et al., 2017). It is therefore necessary to develop new conceptual approaches as well as specific instruments that reflect more closely the nursing setting.

In the 1980s, Taylor and Dear developed the scale Community Attitudes towards the Mentally Ill (CAMI) to predict and explain community reactions to people with severe mental illness (Taylor & Dear, 1981). This 40-item scale has four factors: Authoritarianism, Benevolence, Social Restrictiveness, and Community Mental Health Ideology. Subsequently, researchers in Sweden developed a 20-item version with three factors: Open-Minded and Pro-Integration, Fear and Avoidance, and Community Mental Health Ideology (Högberg et al., 2008).

One of the most widely used instruments is the Attribution Questionnaire (AQ; Corrigan et al., 2003), which assesses public stigma towards individuals with mental illness. Although the AQ has been used in nurses (Ihalainen-Tamlanderet et al., 2016), it does not take into account the characteristic aspects of the nurse-patient relationship.

Specific instruments have been developed for use with healthcare professionals, such as the Mental Illness Clinician's Attitudes (MICA) scale, initially developed to assess the attitudes of medical students towards individuals with mental illness (Kassam et al., 2010). A subsequent version of the scale (MICA v. 4) included a modified item to make it suitable for use in a wider range of healthcare disciplines, such as nursing students (Gabbidon et al., 2012). However, the revised scale was still based on the original biomedical model of stigma.

Another example is the Opening Minds Scale for Health Care Providers (OMS-HC), by Kassam et al. (2012), which is based on a conceptual model that considers the three core elements of stigma to be the following: knowledge (misinformation/differences in understanding due to culture or religion), attitudes (prejudice), and behaviour (discrimination). More recently, Yanos et al. (2017) developed the Clinician Associative Stigma Scale (CASS) to assess mental health clinicians' experiences of associative stigma. Other recent instruments include the Mental Health Provider Stigma Inventory (MHPSI; Kennedy et al., 2017), the Mental Illness Attitude Scale (MIAS; Chen & Chang, 2016), the Mental Health Professional Secondary Stigma Scale (MHPSSS; Jesse, 2016), and the Stigma Scale (Tei-Tominaga et al., 2014). All of them are based on concepts such as professional burnout, and are focused on the assessment of attitudes towards mental illness. However,

none of them include the special characteristics of humanistic care from the perspective of nursing.

3. METHODS

3.1 Aim

The aim of this study was to develop a new scale for assessing the stigma of mental illness in nursing students and to examine its psychometric properties.

3.2 Design

Development of the instrument. A STROBE checklist was completed and included as a supplementary file (Supplementary File S1).

Stages: The development of the instrument and its psychometric analysis involved two distinct sequential stages: (1) developing a conceptual model to understand the stigma of mental illness in the nursing setting (Figure 1), item generation, and content validation; and (2) psychometric analysis (exploratory and confirmatory factor analyses, convergent validity and reliability tests) (Figure 2).

Developing a conceptual model

The conceptual model used to understand the stigma of mental illness in nursing is based on Peplau's (1952) psychodynamic nursing theory. The model comprises three conceptual levels, as shown in Figure 1.

Level 1 corresponds to Peplau's psychodynamic nursing theory (Peplau, 1988). With respect to level 2, the four concepts of the nursing metaparadigm (person, environment, health, and nursing) are considered from Peplau's psychodynamic perspective, who defines nursing as "a significant therapeutic interpersonal process […], an educative instrument, a maturing force that aims to promote forward movement of personality in the direction of creative, constructive, productive, personal, and community living" (Peplau, 1988, p. 16). Finally, level 3 reflects the development of the nursing discipline through the therapeutic nurse-patient relationship (a helping relationship), the objective of which is that nurses come to understand their own behaviours and thus become able to help others identify their perceived difficulties and apply the principles of nursing to these problems. Peplau describes four sequential and interlocking phases in the establishment of the nurse-patient relationship: orientation, identification, exploitation, and resolution. She also refers to the basic nursing competencies inherent to the development and phases of the nurse-patient relationship: managing emotions, especially the anxiety that nurses may feel when relating to the patient;

professional skills and training; attitudes and behaviours, in this case towards an individual with a mental illness.

In the first phase, orientation, the nurse's task is to get to know the patient in their current health situation. In Peplau's words: "in the phase of orientation there is a felt need; a health problem has emerged and is more or less clear to the individual" (Peplau, 1988, p. 18). The predominant feeling in this phase is anxiety. Understanding and managing the psycho-biological experience of anxiety in the nurse's relationship with the patient is part of the nurse's learning process, and the extent to which this is achieved will determine the nurse's response to the patient. In Peplau's view, anxiety may be constructively channelled to the benefit of the therapeutic relationship: "Energy deriving from tension and anxiety connected with 'felt needs' can be harnessed to understand and meet the problem at hand" (Peplau 1988, p. 22). In the next phase, identification, the patient begins to feel that he or she belongs to and is part of a shared venture with the nurse, whose task is to foster it: "When a nurse permits patients to express what they feel, and still get all of the nursing that is needed, then patients can undergo illness as an experience that reorients feelings" (Peplau 1988, p. 31). Nurses' training and professional skills will influence how they respond to this phase. As argued by Peplau: "It is important that nurses keep in mind the leadership role into which the patient casts her and its relations to identification. Identification makes imitative learning possible" (Peplau, 1988, p. 35). The next phase, exploitation, is characterised by patients making full use of the nursing resources and services that are available to them, which may mean that greater demands are placed on the nurse. The personal maturity of the nurse, therefore, becomes particularly important during this phase. As stated by Peplau: "most mature nurses will find these patients challenging to their psychotherapeutic efforts" (Peplau, 1988, p. 39). The final phase of the therapeutic relationship is resolution. As this is as much a psychological as a medical phenomenon, patients may once again experience anxiety if their dependency needs have not been adequately met earlier in the course of their illness. As Peplau notes: "anxiety connected with unmet needs may be converted into vague symptoms" (Peplau, 1988, p. 40). All of the above provides an explanation of the phenomenon of the stigma of mental illness in the nursing context.

Item generation

A preliminary pool of items was generated by the researchers based on the conceptual model (Hair et al., 2010) by grouping the items according to the three proposed factors. The

response format chosen was a five-point Likert scale, as these scales are less confusing for respondents and yield higher response rates (Babakus & Mangold, 1992).

Content validation

To validate the content of the items, the initial scale was sent to a panel of 15 experts in the field of mental health nursing. They all had at least ten years' clinical experience and a postgraduate degree. Each expert was asked to rate independently the relevance of each item using a five-point scale: 1 = not at all relevant for assessing the degree of stigma of mental illness in the nursing context, 2 = not very relevant, 3 = of some relevance, 4 = relevant, and 5 = highly relevant. The items that obtained a Content Validity Index (CVI) < 0.88 (Lynn, 1986) were eliminated. Prior to administering the questionnaire to the validation sample, it was tested using cognitive interviews in 15 second-year nursing undergraduates to examine the time of completion of the questionnaire and the appropriateness and clarity of the items.

Participants

The present study was conducted between November 2016 and September 2017 in three schools of nursing in Spain. Two samples were recruited by means of convenience sampling: one comprised 273 nursing students from the Gimbernat School of Nursing (Autonomous University of Barcelona, Spain) which was used for the exploratory factor analysis (EFA) and for testing convergent validity and reliability; the other comprised 464 nursing students from the University of Alicante School of Nursing (Alicante, Spain) and the Campus Docent Sant Joan de Déu Fundació Privada, School of Nursing (University of Barcelona, Spain) and was used for the confirmatory factor analysis (CFA). The sample ($n = 737$) consisted of 613 women (83.2%) with a mean age of 22.48 years (SD = 4.76). A total of 311 nursing students (42.19%) had previous experience with individuals with mental illness. A member of the research team administered the following two instruments in pen-and-paper format during normal student hours.

3.3 Ethical Considerations

The study was approved by the research ethics committees of each of the participating schools of nursing. Prior to data collection, participants were informed about the purpose of the study. The participants were informed that their participation was voluntary, anonymous, did not compromise their usual lecture time, and would not have any impact on school status.

3.4 Data Analysis

Data analysis was performed using SPSS for Windows 24 (IBM Corporation 2016). For the CFA, structural equation modelling was conducted using EQS 6.1 for Windows (Multivariate Software, Inc., Encino, CA, USA).

Pilot testing

In addition to the questionnaire, students were given another questionnaire in which they were asked to comment on aspects related to the applicability of the first questionnaire: time for completion, length, the appropriateness and clarity of the items, and instructions for completing it.

Internal consistency

Cronbach's alpha was calculated for the full scale and for each of its three dimensions. A value above .7 was considered to indicate good reliability (Streiner & Norman, 2014). We also calculated the corrected item-total correlation, estimating the correlation of each item with the scale as a whole and with each corresponding subscale, considering a correlation of .30 to be the lower limit (Nunnally & Bernstein, 1994). Items were eliminated if the correlation was below this limit and/or if the value of alpha increased when this item was eliminated (Tabachnick & Fidell, 2013).

Temporal stability

Test-retest reliability was examined by calculating the intraclass correlation coefficient (Cicchetti, 1994). The EVEPEM was re-administered to a sample of third-year nursing students ($n = 40$) from the Gimbernat School of Nursing (Autonomous University of Barcelona, Spain) three weeks after the initial administration. The intraclass correlation coefficient (ICC) for the scale was considered to be adequate if it yielded values higher than .75 (Fleiss, 1981). The results are shown in Table 3.

Exploratory factor analysis (EFA)

Factors were identified using promax oblique rotation, which is indicated if the potential factors are considered to be theoretically highly interrelated. The number of factors to be extracted was established a priori to be three, in line with the conceptual model. The suitability of factor analysis was verified by calculating the Kaiser-Meyer-Olkin coefficient and by performing Bartlett's test of sphericity. Items with a factor loading above .40 were retained (Izquierdo et al., 2014). A minimum of 10 cases per item were required for the EFA and ≥ 20 cases per item were necessary for the CFA (Nunnally and Bernstein, 1994).

Confirmatory factor analysis (CFA)

Subsequently, for the CFA, it was decided to use a new sample from two other schools of nursing. Parameter estimates were obtained using the generalised least squares method, which has less strict normality criteria and is mainly used for ordinal items (Byrne, 2013). The overall fit of the model was determined by calculating the following indices: the chi-square goodness-of-fit test, the ratio between chi-square and the degrees of freedom (χ^2 / df), the GFI (goodness-of-fit index), the AGFI (adjusted goodness-of-fit index), the CFI (comparative fit index), the BBNFI (Bentler-Bonnett normed fit index), the BBNNFI (Bentler-Bonnett non-normed fit index), the RMSE (root mean square error), and the RMSEA (root mean square error of approximation). GFI, AGFI, CFI, BBNFI, and BBNNFI values may range from 0 (no fit) to 1 (perfect fit) and are not affected by sample size. The criteria for a good fit were GFI, AGFI, CFI, BBNFI and BBNNFI values above .80 (Browne & Cudeck, 1993), and RMSEA and RMSE values were to be below .06 (Byrne, 2013; Watson et al., 2013).

Convergent validity

Convergent validity was tested by calculating the Pearson correlation coefficient between scores for the EVEPEM and the Spanish Validation of CAMI-S (Community Attitudes towards Mental Illness) (Sastre-Rus et al., 2018). This instrument was originally developed by Taylor and Dear (1981), and has both 20-item (Högberg et al., 2008) and 40-item versions (Morris et al., 2012). It is made up of the following factors: (i) Open-Minded and Pro-Integration, (ii) Fear and Avoidance, and (iii) Community Mental Health Ideology. Items are rated on a five-point Likert scale, ranging from 1 = "totally disagree" to 5 = "totally agree". Possible total scores range from 20 to 100, with higher scores indicating a more favourable view regarding the community integration of individuals with a mental illness.

4. RESULTS

Stage 1: Developing a conceptual model for understanding the stigma of mental illness in the nursing context; item generation; and content validation.

Developing a conceptual model

The conceptual model derived from Peplau's theory enables us to consider the stigma of mental illness in nursing in terms of three dimensions or factors that are determined by the psychodynamic processes occurring in the different phases of the nurse-patient relationship,

as well as by the basic nursing competencies (managing psychobiological experiences, training, and attitudes and behaviours).

The three factors that are considered to be capable of generating stigma in relation to mental illness in the nursing context were labelled as follows: Factor 1, Violence or Dangerousness; Factor 2, Disability; and Factor 3, Irresponsibility and Lack of Competence. The first factor (Violence or Dangerousness) refers to a nurse's beliefs about the possibility that an individual with a mental illness may, in the context of the therapeutic relationship, behave or act in such a way as to pose a threat to the nurse's physical wellbeing. The second factor (Disability) relates to the assumption that an individual with a mental illness might not be capable of adapting to the demands of everyday life and may not accept help and/or may need to be physically restrained. Finally, the third factor (Irresponsibility and Lack of Competence) refers to the assumption that individuals with mental illness will be unable to make conscious decisions or assume the consequences of their decisions, thus constituting a burden to society.

Item generation and content validation

Based on the conceptual model and after a literature review, the researchers identified an initial pool of 75 items which were grouped according to the three theoretical dimensions (Violence/Dangerousness, Disability, and Irresponsibility/Lack of Competence). The relevance of these items was then rated by the panel of experts. A total of 55 items (73.33%) were eliminated because they obtained a CVI < 0.88. The final scale consists of the remaining 20 items distributed among three factors. Both positive and negative wording was used (items 2, 3, 5, 10, 13, and 15 score directly, with the rest of the items scoring in reverse). Each item was rated on a five-point Likert scale (from 5 = totally agree to 1 = totally disagree). The instrument yields both a total score (the sum of the item scores) and partial scores for each of the three dimensions (Table 1). The three theoretical factors (Figure 1) derived from Peplau's theory formed the basis for the development and validation of the Scale for Assessing the Stigma of Mental Illness in Nursing (SASMIN), also known as EVEPEM, derived from its original name and acronym in Spanish.

Pilot testing

Data analysis showed that the time of completion of the questionnaire was between 10 and 15 minutes, that 92% of the participants considered it to be appropriate in length, and that the items were clearly worded and fit for purpose.

Stage 2: Psychometric analysis (exploratory and confirmatory factor analyses, convergent validity and reliability tests)

Internal consistency

The Cronbach's alpha coefficient for the entire scale was .825. Values for each of its three dimensions ranged between .626 and .731 (Table 2).

Temporal stability

The intraclass correlation coefficient (ICC) for the scale as a whole was .906 (95% CI: .883 - .924), which may be considered to be adequate. The results are shown in Table 3.

Exploratory factor analysis (EFA)

The Kaiser-Meyer-Olkin coefficient (KMO = .83) and Bartlett's test of sphericity ($p < .01$) confirmed the appropriateness of the sample. A principal components analysis was then conducted using promax rotation. The number of factors to be extracted was established a priori to be three, in line with the conceptual model. Items were assigned to a given factor according to the criterion established by Tabachnick and Fidell (2013), i.e. an item is conceptually related to the factor in question if it has a loading to that factor greater than .30. The three factors (Violence/Dangerousness, Disability, and Irresponsibility/Lack of Competence) explained 24.2%, 8.4%, and 6.8% of the variance respectively (total variance explained: 39.5%). All the items were loaded onto the factor to which they were theoretically related. The results of this analysis are shown in Table 4.

Confirmatory factor analysis (CFA)

The result of the chi-squared test was significant ($\chi^2 = 474.005$; $p < .001$), suggesting an inadequate model fit. However, as the chi-squared test is sensitive to sample size, we calculated the ratio between the chi-squared and the degrees of freedom (χ^2 / df), where values of between 2 and 6 are regarded as indicative of an acceptable fit (Hu & Bentler, 1998). The value obtained (2.83) supported the goodness of fit of the model. The GFI (.955), AGFI (.944), CFI (.894), BBNFI (.819), and BBNNFI (.879) values also indicated an acceptable fit of the model (Table 5), as did the RMSE (.06) and RMSEA (.05) values. The results showed that the correlations between the factors had optimal values between them (between +1 and -1) and confirmed that the proposed three-factor model shows a satisfactory fit to the data (Figure 3).

Convergent validity

Convergent validity was evaluated by calculating the Pearson correlation coefficient between the scores for the EVEPEM and the CAMI. The results showed that the EVEPEM was negatively and significantly correlated with the CAMI ($r = -.602$, $p < .01$), suggesting that nurses who scored higher on the mental health-related stigma measure had a less favourable opinion of the integration of individuals with a mental illness into the community. This supports the convergent validity of the EVEPEM.

5. DISCUSSION

The present study shows the development and preliminary psychometric analysis of EVEPEM, a 20-item scale designed to assess the stigma of mental illness in the nursing context. It is worth noting the uniqueness of this scale compared to other scales available for assessing the stigma of mental illness in the nursing context.

The therapeutic relationship that nurses establish when caring for individuals with a mental illness is a feature that distinguishes nursing from other healthcare disciplines, such a relationship being developed primarily due to nurses' close and continuous contact with mental health service users and the holistic approach they use. However, the instruments currently available for assessing social or associative stigma do not take into account these specific aspects of nursing care, whereas EVEPEM does.

Even though further studies are needed to improve the validity of this instrument, the psychometric results obtained suggest that this scale for assessing the stigma of mental illness in nursing is robust. This scale could be used at both undergraduate and postgraduate levels of nursing education to assess interventions implemented by nursing schools and/or hospitals with the aim of eradicating associative stigma and, as a result, improving the quality of care (Bennett & Stennett, 2015; Schafer et al., 2011).

Given the great diversity of the existing models and theories in the field of mental health, it is of paramount importance to specify the theoretical principles that will guide the definition of the construct and the wording of the items to develop a new psychometric instrument.

We believe that Peplau's model of psychodynamic nursing was the most suitable for the objectives of our study, as it considers several aspects that may play a key role in generating stigma around mental illness in the nursing context, which, based on this conceptual model and recent studies on this topic (Charles & Bentley, 2017; Chiles et al., 2017; Destrebecq, 2017; Yanos et al., 2017), includes the patients' capacity to recover, ability to take responsibility for their actions, and social isolation.

The theoretical model comprised three dimensions: Violence and Dangerousness, Disability, and Irresponsibility/Lack of Competence. This three-factor structure was subsequently verified by EFA and CFA (Yang-Wallentin et al., 2010).

The results indicated that the 20-item EVEPEM scale is a valid and reliable instrument for assessing the associative stigma of mental illness in the nursing context. The data showed a good fit to the three-factor model, and the scale had acceptable levels of internal consistency and temporal stability, as well as excellent levels of content validity and convergent validity. The relatively small number of items implies a low response burden, which means that the scale could be used in conjunction with other measures (Streiner & Norman, 2014). Indeed, several authors have considered one or more of these factors in their research on the stigma of mental illness (Gabbidon et al. 2012; Charles & Bentley 2017; Chiles et al. 2017; Destrebecq et al. 2017; Yanos et al. 2017).

One of the main limitations of this study concerns the use of a convenience sample of nursing undergraduates. It is important to understand the impact that education and clinical practice have on the attitudes of nursing students, including junior and senior nursing students, towards users of mental health services (Rodríguez-Almagro et al., 2019). Future studies on the EVEPEM should therefore aim to recruit graduate nurses. It would also be useful to validate the scale in other cultural contexts where the stigma associated with mental illness may have different characteristics.

The use of the CAMI scale in the study population may be questioned. This scale was used because it seemed interesting to assess whether students' stigmatising attitudes towards individuals with mental disorders as members of the community correlated with their scores on the EVEPEM scale. Future studies may need to incorporate a more relevant stigma scale to measure convergent validity. Another limitation of this study concerns the possibility of a social desirability bias. Although the anonymity of the responses helps to avoid this problem, there is still a risk that the participants' responses will reflect what they think is expected of them as health professionals rather than their own experience (Bjørk et al., 2014). Future studies should therefore examine the predictive ability (sensitivity and specificity) of the EVEPEM scale.

6. CONCLUSIONS

The 20-item EVEPEM was shown to be a valid, singular, and reliable tool for assessing the stigma of mental illness in the nursing setting, which is considered in terms of three dimensions: Violence/Dangerousness, Disability, and Irresponsibility/Lack of Competence.

7. RELEVANCE FOR CLINICAL PRACTICE

Strategies and interventions must be developed and implemented in both educational and clinical settings in order to reduce the stigma associated with mental illness in nursing. In this sense, there is a need for valid and reliable assessment instruments. Applying the EVEPEM may help to improve our understanding of the stigma of mental illness in this setting. EVEPEM could also be used to assess the effectiveness of anti-stigma interventions.

REFERENCES

Babakus, E., & Mangold, G. (1992). Adapting the SERVQUAL scale to hospital services: An empirical investigation. *HSR: Health Services Research 26*(6), 767-786.

Bates, L., & Stickley, T. (2013). Confronting Goffman: how can mental health nurses effectively challenge stigma? A critical review of the literature. *Journal of Psychiatric and Mental Health Nursing, 20*(7), 569–575. https://doi.org/10.1111/j.1365-2850.2012. 01957.x

Ben Natan, M., Drori, T., & Hochman, O. (2015). Associative stigma related to psychiatric nursing within the nursing profession. *Archives of Psychiatric Nursing, 29*(6), 388–392. https://doi.org/10.1016/j.apnu.2015.06.010

Bennett, J., & Stennett, R. (2015). Attitudes towards mental illness of nursing students in a Baccalaureate programme in Jamaica: A questionnaire survey. *Journal of Psychiatric and Mental Health Nursing, 22*(8), 599-605. https://doi.org/10.1111/jpm.12234

Bjørk, I.T., Berntsen, K., Brynildsen, G., & Hestetun, M. (2014). Nursing students' perceptions of their clinical learning environment in placements outside traditional hospital settings. *Journal of Clinical Nursing, 23*, 2958–2967 https://doi.org/10.1111/jocn.12532

Brohan, E., Slade, M., Clement, S.& Thornicroft, G. (2010) Experiences of mental illness stigma, prejudice and discrimination: a review of measures. *BMC Health Services Research*, 10, 80. https://doi.org/10.1186/1472-6963-10-80

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In: K.A. Bollen & J.S. Long (Eds) *Testing structural equation models*, (pp. 136-162). Newbury Park, CA: Sage.

Byrne, B.M. (2013). *Structural equation modeling with EQS: Basic concepts, applications and programming*. London: Routledge

Charles, J.K., & Bentley, K.J. (2017). Measuring mental health provider-based stigma: Development and initial psychometric testing of a self-assessment instrument. *Community Mental Health Journal*, *54*(1), 33-48. https://doi.org/10.1007/s10597-017-0137-4

Chang, C.C., Su, J.A., Tsai, C.S., Yen, C.F., Liu, J.H., & Lin, C.Y. (2015). Rasch analysis suggested three unidimensional domains for Affiliate Stigma Scale: additional psychometric evaluation. *Journal of Clinical Epidemiology*, 68(6), 674–683. https://doi.org/10.1016/j.jclinepi.2015.01.018

Chang, C.C; Lin, C.Y, Gronholm, P.C., & Wu,T.H. (2018). Cross-Validation of Two Commonly Used Self-Stigma Measures, Taiwan Versions of the Internalized Stigma Mental Illness Scale and Self-Stigma Scale–Short, for People with Mental Illness. *Assessment*. 25(6), 777-792. https://doi.org/10.1177/1073191116658547

Chen, M.D., & Chang, Y.C. (2016). Personnel attitudes toward people with mental illness at a psychiatric hospital in Taiwan. *International Journal of Social Psychiatry*, *62*(4), 361–368. https://doi.org/10.1177/0020764016634385

Cheng, C. M., Chang, C. C., Wang, J. Der, Chang, K. C., Ting, S. Y., & Lin, C. Y. (2019). Negative impacts of self-stigma on the quality of life of patients in methadone maintenance treatment: The mediated roles of psychological distress and social functioning. *International Journal of Environmental Research and Public Health*, 16(7). https://doi.org/10.3390/ijerph16071299

Cicchetti, D.V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment, 6*(4), 284-290

Chiles, C., Stefanovics, E., & Rosenheck, R. (2017). Attitudes of students at a US medical school toward mental illness and its causes. *Academic Psychiatry*, *41*(3), 320–325.

Corrigan, P.W., Markowitz, F.E., Watson, A., Rowan, D., & Kubiak, M.A. (2003). An

attribution model of public discrimination towards persons with mental illness. *Journal of Health and Social Behavior*, *44*(2), 162. https://doi.org/10.2307/1519806

Corrigan, P.W., Roe, D., & Tsang, H.W. (2011). *Challenging the stigma of mental illness: Lessons for therapists and advocates.* Hoboten, NJ: Wiley & Sons. https://doi.org/10.1002/9780470977507

Corrigan, P. W., Kosyluk, K. A., & Rüsch, N. (2013). Reducing stigma, including self-stigma. American Journal of Public Health, 103(5). https://doi.org/10.2105/AJPH.2012.301037

Corrigan, P.W., Powell, K.J., & Michaels, P.J. (2014). Brief battery for measurement of stigmatizing versus affirming attitudes about mental illness. *Psychiatry Research,* 215(2), 466–470. https://doi.org/10.1016/j.psychres.2013.12.006

Delaney, K.R. (2012). Psychiatric mental health nurses: Stigma issues we fail to see. *Archives of Psychiatric Nursing*, *26*(4), 333–335. https://doi.org/10.1016/j.apnu.2012.04.006

Destrebecq, A., Ferrara, P., Frattini, L., Pitella, F., Rossano, G., Striano, G., … Gambini, O. (2017). The Italian version of the Opening Minds Stigma Scale for Healthcare Providers: Validation and study in a sample of Bachelor students. *Community Mental Health Journal, 54(1), 66-72*. https://doi.org/10.1007/s10597-017-0149-0

Fleiss, J.L. (1981). *Statistical methods for rates and proportions*. New York: John Wiley & Sons.

Gabbidon, J., Clement, S., van Nieuwenhuizen, A., Kassam, A., Norman, I., Thornicroft, G. (2012). Mental Illness: Clinicians' Attitudes (MICA) scale: Psychometric properties of a version for healthcare students and professionals. *Psychiatry Research*, *206*(1), 81–87. https://doi.org/10.1016/j.psychres.2012.09.028

Gaebel, W., Zäske, H., Zielasek, J., Cleveland, H.R., Samjeske, K., Stuart H., …Sartorius, N. (2015). Stigmatization of psychiatrists and general practitioners: Results of an international survey. *European Archives of Psychiatry and Clinical Neuroscience*, *265*(3), 189–197. https://doi.org/10.1007/s00406-014-0530-8

Goffman, E. (1963). *Stigma.* London: Pelican Books.

Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010) *Multivariate data analysis*. 7th Edition, New York. Pearson.

Hankir, A., Zaman, R., & Evans-Lacko, S. (2014). The wounded healer: An effective anti-

stigma intervention targeted at the medical profession? *Psychiatria Danubina*, *26 Suppl 1*, 89–96.

Hipes, C., Lucas, J., Phelan, J.C., & White, R.C. (2016). The stigma of mental illness in the labor market. *Social Science Research*, *56*, 16–25. https://doi.org/10.1016/j.ssresearch.2015.12.001

Högberg, T., Magnusson, A., Ewertzon, M., & Lützén, K. (2008). Attitudes towards mental illness in Sweden: Adaptation and development of the community attitudes towards mental illness questionnaire. *International Journal of Mental Health Nursing*, *17*(5), 302–310. https://doi.org/0.1111/j.1447-0349.2008.00552.x

Hu, L.T. & Bentler, P.M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*(4), 424.

IBM Corporation (2016). IBM SPSS Statistics for Windows, version 24.0. Armonk, NY: IBM Corpor.

Ihalainen-Tamlander, N., Vähäniemi, A., Löyttyniemi, E., Suominen, T., & Välimäki, M. (2016). Stigmatizing attitudes in nurses towards people with mental illness: a cross-sectional study in primary settings in Finland. *Journal of Psychiatric and Mental Health Nursing*, *23*(6), 427–437. https://doi.org/10.1111/jpm.12319

Izquierdo, I., Olea, J., Abad, FJ. (2014). Exploratory factor analysis in validation studies. Uses and recommendations. *Psicothema*, 26 (3), 395-400.

Jesse, S.R. (2016). *Secondary stigma for professionals who work with marginalized groups: A comparative study* (doctoral dissertation). Bowling Green State Universeity, Bowling Green, Ohio.

Kassam, A., Glozier, N., Leese, M., Henderson, C., & Thornicroft, G. (2010). Development and responsiveness of a scale to measure clinicians' attitudes to people with mental illness (medical student version). *Acta Psychiatrica Scandinavica*, *122*(2), 153–161. https://doi.org/10.1111/j.1600-0447.2010.01562.x

Kassam, A., Papish, A., Modgill, G., & Patten, S. (2012). The development and psychometric properties of a new scale to measure mental illness related stigma by health care providers: The Opening Minds Scale for Health Care Providers (OMS-HC). *BMC Psychiatry*, *12*(1), 62. https://doi.org/10.1186/1471-244X-12-62

Kennedy, S.C., Abell, N., & Mennicke, A. (2017). Initial validation of the mental health

provider stigma inventory. *Research on Social Work Practice*, *27*(3), 335–347. https://doi.org/10.1177/1049731514563577

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research,35*(6), 382–5.

Morris, R., Scott, P.A., Cocoman, A., *Chambers*, M., Guise, V., Välimäki, M., Clinton, G. (2012). Is the Community Attitudes towards the Mentally Ill scale valid for use in the investigation of European nurses' attitudes towards the mentally ill? A confirmatory factor analytic approach. *Journal of Advanced Nursing*, *68*(2), 460–470. https://doi.org/10.1111/j.1365-2648.2011.05739.x

Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric theory*, 3rd ed. New York, NY: McGraw-Hill.

Park, K., & Seo, M. (2016). Care burden of parents of adult children with mental illness: The role of associative stigma. *Comprehensive Psychiatry*, *70*, 159–164. https://doi.org/10.1016/j.comppsych.2016.07.010

Peplau, H.E. (1952). *Interpersonal relations in nursing.* New York: Putnam & Sons.

Peplau, H.E. (1988). *Interpersonal relations in nursing: A conceptual frame of reference for psychodynamic nursing*. New York. Springer Publishing Company.

Riffel, T., & Chen, S. P. (2020). Exploring the knowledge, attitudes, and behavioural responses of healthcare students towards mental illnesses—A qualitative study. International Journal of Environmental Research and Public Health, 17(1), 1–11. https://doi.org/10.3390/ijerph17010025

Rodríguez-Almagro, J., Hernández-Martínez, A., Rodríguez-Almagro, D., Quiros-García, J. M., Solano-Ruiz, M. del C., & Gómez-Salgado, J. (2019). Level of stigma among Spanish nursing students toward mental illness and associated factors: A mixed-methods study. International Journal of Environmental Research and Public Health, 16(23), 1–13. https://doi.org/10.3390/ijerph16234870

Sastre-Rus, M., Montes-Hidalgo, J., Lluch-Canut, M.T., García-Lorenzo, A., & Tomás-Sábado, J. (2018). Adaptación y validación preliminar de la forma española de la escala CAMI-S (Community Attitudes towards Mental Illness) [Adaptation and preliminary validation of the Spanish version of the CAMI-S]. *Revista Enfermeria Salud Mental, 10*: 5-13.

Sastre-Rus, M., García-Lorenzo, A., Lluch-Canut, M.-T., Tomás-Sábado, J., & Zabaleta-Del-Olmo, E. (2019). Instruments to assess mental health-related stigma among health professionals and students in health sciences: A systematic psychometric review. Journal of Advanced Nursing. https://doi.org/10.1111/jan.13960.

Schafer, T., Wood, S., & Williams, R. (2011). A survey into student nurses' attitudes towards mental illness: Implications for nurse training. *Nurse Education Today, 31*(4), 328-332. https://doi.org/0.1016/j.nedt.2010.06.010

Sercu, C., Ayala, R. A., Bracke, P., Sercua, C., Ayalaa A.R., & Bracke, P. (2015). How does stigma influence mental health nursing identities? An ethnographic study of the meaning of stigma for nursing role identities in two Belgian Psychiatric Hospitals. *International Journal of Nursing Studies*, *52*(1), 307–316. https://doi.org/10.1016/j.ijnurstu.2014.07.017

Streiner, D L., & Norman, G.R. (2014). *Health measurement scales: A practical guide to their development and use*, 5th ed. Oxford: Oxford University Press.

Tabachnick, B.G., & Fidell, L.S. (2013). *Using multivariate statistics*, 6th ed. Boston, MA: Pearson.

Taylor, S.M., & Dear, M.J. (1981). Scaling community attitudes toward the mentally ill. *Schizophrenia Bulletin, 7*(2), 225-240.

Tei-Tominaga, M., Asakura, T., & Asakura, K. (2014) Stigma towards nurses with mental illnesses: A study of nurses and nurse managers in hospitals in Japan. *International Journal of Mental Health Nursing, 23*(4), 316–325. https://doi.org/10.1111/inm.12052

Tucker, J.R., Hammer, J.H., Vogel, D.L., Bitman, R.L., Wade, N.G., & Maier, E.J. (2013). Disentangling self-stigma: Are mental illness and help-seeking self-stigmas different? *Journal of Counseling Psychology*, *60*(4), 520–531. https://doi.org/10.1037/a0033555

Watson, A.C., & Corrigan, P.W. (2005). Challenging public stigma: A targeted approach. In: P.W. Corrigan (Ed.). *On the stigma of mental illness: Practical strategies for research and social change*. Washington, DC:American Psychological Association. https://doi.org/10.1037/10887-013

Watson, R., Yanhua, C., Ip, M.Y., Smith, G.D., Wong, T.K., & Deary, I.J. (2013). The structure of stress: Confirmatory factor analysis of a Chinese version of the Stressors in

Nursing Students Scale (SINS). *Nurse Education Today, 33*, 160–165.

Yang-Wallentin, F., Jöreskog, K.G., & Luo, H. (2010). Confirmatory factor analysis of ordinal variables with misspecified models. *Structural Equation Modeling: A Multidisciplinary Journal*, *17*(3), 392–423.

Yanos, P.T., Vayshenker, B., DeLuca, J.S., & O'Connor, L.K. (2017). Development and validation of a scale assessing mental health clinicians' experiences of associative stigma. *Psychiatric Services*, 68(10), 1053-1060. https://doi.org/10.1176/appi.ps.201600553

Zartaloudi, A., & Madianos, M. (2010). Stigma related to help-seeking from a mental health professional. *Health Science Journal*, 4(2), 77–83.

Table 1. Distribution of scale for assessing the stigma of mental illness in nursing.

Factor	Items	Minimum score	Maximum score
Factor 1. Violence and Dangerousness	6*,7*,9*,11*,12*,14*,16*,17*	8	40
Factor 2. Disability	4*,8*,18*,19*,20*	5	25
Factor 3. Irresponsibility and Lack of Competence	1*,2,3,5,10,13,15	7	35
Total EVEPEM score		20	100

*Items score in reverse

Table 2. Internal consistency of the scale for assessing the stigma of mental illness in nursing.

Content of the 20 items		Total subscale	Cronbach's alpha Total subscale without item	Total scale without item
Factor 1. Violence and Dangerousness		.731		
Item 6	People with a mental disorder are more likely to behave violently than are other people.		.718	.818
Item 7	People with a mental disorder should be isolated from society.		.706	.816
Item 9	People with a mental disorder are more likely to commit crimes.		.691	.816
Item 11	All patients who are admitted to a mental health unit should be isolated initially.		.706	.815
Item 12	All people with a mental disorder behaves inappropriately.		.706	.813
Item 14	Most people with a mental disorder are dangerous.		.680	.808
Item 16	I feel afraid when caring for people with a mental disorder.		.729	.824
Item 17	Patients with a mental disorder should be isolated from other patients.		.697	.814
Factor 2. Disability		.696		
Item 4	People with a mental disorder act without thinking of the consequences.		.622	.809
Item 8	In general, people with a mental disorder refuse therapeutic help.		.668	.821
Item 18	All patients with a mental disorder end up being readmitted.		.658	.820
Item 19	People with a mental disorder are unable to seek help on their own.		.593	.812
Item 20	All patients admitted to a mental health unit need to be physically restrained.		.686	.816
Factor 3. Irresponsibility and Lack of Competence		.626		
Item 1	People with a mental disorder are a burden on their family and society.		.606	.820
Item 2	People with a mental disorder can be as good a professional as anybody.		.581	.822
Item 3	People with a mental disorder can take responsibility for looking after children.		.569	.817
Item 5	Caring for a patient with a mental disorder is no more burdensome than is caring for other patients.		.594	.820
Item 10	People with a mental disorder can lead a normal life.		.568	.813
Item 13	Working with people with a mental disorder is very rewarding.		.588	.820
Item 15	Patients with a mental disorder have the same rights as everybody.		.613	.823
TOTAL		.825		

Table 3: Intraclass correlation coefficient (ICC) for test-retest reliability of scale for assessing the stigma of mental illness in nursing.

EVEPEM		ICC	95% CI
1.	Violence and Dangerousness	.858	.823 - .885
2.	Disability	.815	.770 - .851
3.	Irresponsibility and Lack of Competence	.832	.791 - .865
TOTAL		.906	.883 - .924

ICC: Intraclass correlation coefficient; CI: confidence interval.

Table 4. Exploratory factor analysis of the scale Scale for Assessing the Stigma of Mental Illness in Nursing with a promax rotation structure matrix.

	Comunalidad	Factor 1	Factor 2	Factor 3
Item 1	,208			.411
Item 2	,346			.567
Item 3	,421			.551
Item 4	,528		.692	
Item 5	,267			.551
Item 6	,329	.530		
Item 7	,326	.532		
Item 8	,371		.608	
Item 9	,593	.698		
Item 10	,389			.560
Item 11	,312	.532		
Item 12	,403	.521		
Item 13	,459			.634
Item 14	,526	.691		
Item 15	,253			.501
Item 16	,565	.563		
Item 17	,401	.627		
Item 18	,385		.614	
Item 19	,527		.719	
Item 20	,297		.465	

Percentage of explained variance		24.2%	8.4%	6.8%
Eigenvalues		4.6	1.68	1.36

a. Factors with loadings < .4 were eliminated

* F1: Factor 1 (Violence and Dangerousness); F2: Factor 2 (Disability); F3: Factor 3 (Irresponsibility and Lack of Competence).

Table 5. Goodness-of-fit indices for the confirmatory model.

INDEX	VALUE
BBNFI	.819
BBNNFI	.879
CFI	.894
GFI	.955
AGFI	.944
RMSE	.06
RMSEA	.05
Chi-square goodness-of-fit test	$\chi^2 = 474.005$; df = 167; $P = .0001$
Fit ratio	$\chi^2 / df = 2.83$

BBNFI: Bentler-Bonnett normed fit index. BBNNFI: Bentler-Bonnett non-normed fit index. CFI: comparative fit index. GFI: goodness-of-fit index. AGFI: adjusted goodness-of-fit index. RMSE: root mean square error. RMSEA: root mean square error of approximation.

Figure 1. Conceptual model for understanding the stigma of mental illness in nursing, based on Peplau's psychodynamic nursing theory.
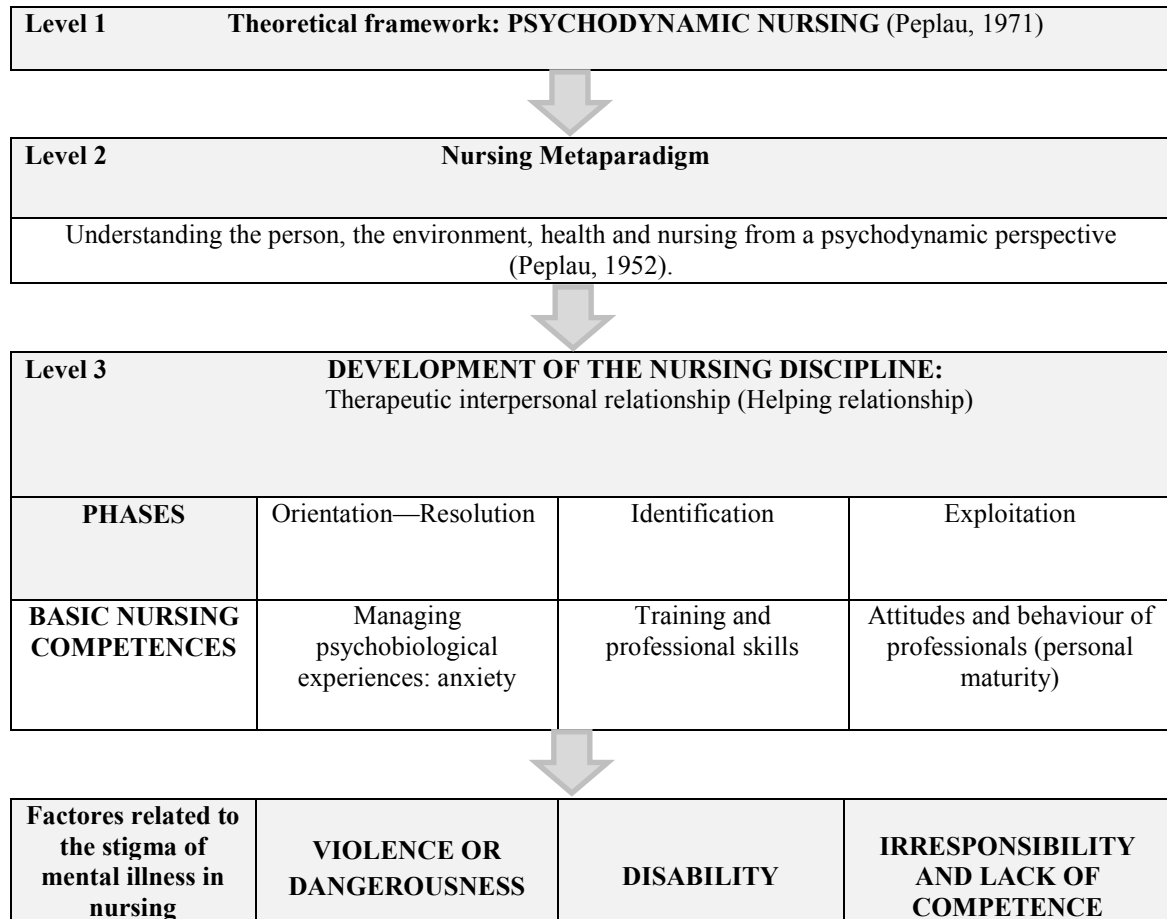
Level 1	Theoretical framework: PSYCHODYNAMIC NURSING (Peplau, 1971)

Level 2	Nursing Metaparadigm
Understanding the person, the environment, health and nursing from a psychodynamic perspective (Peplau, 1952).	

Level 3	DEVELOPMENT OF THE NURSING DISCIPLINE: Therapeutic interpersonal relationship (Helping relationship)		
PHASES	Orientation—Resolution	Identification	Exploitation
BASIC NURSING COMPETENCES	Managing psychobiological experiences: anxiety	Training and professional skills	Attitudes and behaviour of professionals (personal maturity)

Factores related to the stigma of mental illness in nursing	VIOLENCE OR DANGEROUSNESS	DISABILITY	IRRESPONSIBILITY AND LACK OF COMPETENCE

Figure 2. Stages in the development of the scale for assessing the stigma of mental illness in nursing.

Stage 1: CONTENT VALIDATION

Conceptual model of the scale for assessing the stigma of mental illness in nursing

Item generation: Key concepts for understanding the stigma of mental illness in nursing, the nursing metaparadigm and literature review.	**Content validation**

Item list			Panel of 15 experts from the field of mental health nursing. Individual rating of item relevance. Use of a 5-point Likert scale. **75 items** Of the 75 initial items that were rated by experts, 20 were retained. Items that obtain a Content Validity Index (IVC) <0.88 are eliminate. **20 items**
✓ Beliefs ✓ Values ✓ Fear ✓ Prejudice ✓ Behaviour ✓ Violence ✓ Hiding the illness ✓ Stereotypes	✓ Inability to recover ✓ Knowledge ✓ Training ✓ Assertiveness ✓ Response to the need for help	✓ Social distance ✓ Relational skills ✓ Empathy ✓ Discrimination ✓ Diagnostic label ✓ Biogenetic explanation ✓ Contact	
75 items			

Final version of the EVEPEM: 20 items		
F1: Violence/Dangerousness (8 items)	**F2: Disability (5 items)**	**F3: Irresponsibility /Lack of Competence (7 items)**

Stage 2: PSYCHOMETRIC ANALYSIS

Pilot testing: 15 second-year nursing undergraduates.

Data were analysed and showed that the questionnaire took between 5 and 10 minutes to complete and that 92% of participants considered it to be appropriate in length and that the items were clearly worded and fit for purpose.

Exploratory factor analysis (EFA)	Confirmatory factor analysis (CFA)	Convergent validity	Reliability
(n = 273)	(n = 464)	Correlation with the CAMI-20 (n = 273)	Internal consistency (n = 273) Temporal stability (n = 40)

Figure 3. Model derived from the confirmatory factor analysis of the scale for assessing the stigma of mental illness in nursing.