

Development and Psychometric Assessment of Risk Factors of Compassion Fatigue Inventory in Nurses

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Background and Purpose: Identifying the risk factors of compassion fatigue is the basic step in designing effective interventions to prevent and manage compassion fatigue. This study developed an inventory of compassion fatigue risk factors and investigated its psychometric properties. **Methods:** This methodological study consisted of two phases: item pool generation through semistructured interviews with 13 nurses and reviewing of 38 related articles and the psychometric validation. **Results:** The initial item pool contained 62 items. The psychometric properties was examined and exploratory factor analysis revealed a four-factor structure. Risk Factors of Compassion Fatigue Inventory (RFCFI) contained 20 items. The Cronbach's alpha, intra-class correlation coefficient (ICC), and standard error of measurement (SEM) were .86, 0.83, and 5.73 respectively. **Conclusion:** RFCFI is a short, self-reporting, valid, and reliable inventory for determining the risk factors of compassion fatigue in nurses and can be easily used by managers, nurses, and scholars.

Keywords: compassion fatigue; secondary traumatic stress; professional burnout; risk factor; validation studies; nursing

Employment in healthcare professions, specifically nursing, exposes nurses continually to professional and emotional stressors due to long-term caring for and interaction with end-stage patients in pain, suffering, and distress leading to possible behavioral, emotional, and cognitive consequences in nurses (Showalter, 2010; Yoder, 2010). Joinson (1992) identified this phenomenon as the unique form of fatigue and called it compassion fatigue. The incidence of compassion fatigue has been reported in various wards of hospitals with varying rates (Sinclair, Raffin-Bouchal, Venturato, Mijovic-Kondejewski, & Smith-Macdonald, 2017), so that 21.6% of oncology nurses (Cho & Jung, 2014), 27.3% of trauma nurses (Hinderer et al., 2014), 30% of neonatal nurses (Sacco, Ciurzynski, Harvey, & Ingersoll, 2015), 39.9% of emergency nurses (Ariapooran, 2013), and 40% of ICU nurses (Elkonin & Van Der Vyver, 2011) are at high risk of compassion fatigue. This phenomenon is associated with a wide range of destructive complications including extreme physical and mental exhaustion, depression, seclusion from family and society, loss of interest in previously enjoyable affairs, continuous mental involvement with others' problems, headaches, gastrointestinal problems, muscular rigidity, sleep disorders and insomnia, and self-ignorance affecting nurses' individual and professional interactions and their care-giving capabilities. It may also lead to increased turnover, absenteeism, work leave, sick leave, work days loss, safety risks, weak judgments, and finally decreased productivity in the organization (Berger, Polivka, Smoot, & Owens, 2015; Branch & Klinkenberg, 2015; Kelly, Runge, & Spencer, 2015; Potter et al., 2010; Showalter, 2010). Despite the destructive factors of compassion fatigue in nurses, this phenomenon is preventable and treatable. Yet, many nurses and even nursing managers are not aware of it and its risk factors (Young, Derr, Cicchillo, & Bressler, 2011). So, identification of risk factors of compassion fatigue is a basic step in prevention and management. An increased awareness of the risk factors of this phenomenon may help nurses learn the self-care strategies and effective coping skills to avoid the incidence of its destructive psychological outcomes in their domain (Chung, 2015). If the risk factors of compassion fatigue are not identified and treated effectively, this will greatly affect nurses' personal and professional life causing them to lose their compassionate care-giving ability forever (Bourassa, 2009; Mcholm, 2006; Potter et al., 2010). Seeing the absence of an instrument for identifying the risk factors of compassion fatigue in nurses, this study aimed at developing an inventory of such risks in nurses and validating it on the basis of the Iranian sociocultural context.

BACKGROUND AND CONCEPTUAL FRAMEWORK

A comprehensive search of reliable Persian and English databases yielded no specific tool for identifying and determining the risk factors of compassion fatigue in nurses in Iran and round the globe. However, several scales have been used over the last two decades to measure CF rate including Compassion Fatigue Self-tests, Secondary Traumatic Stress Scale, Scale of Compassion Fatigue, and Professional Quality of Life Scale (ProQOL).

Despite the presence of such scales, some scholars still believe that the measurement of CF is challenging due to ambiguities in the conceptual model and its relation to other occupational stresses (Sinclair et al., 2017). It should be pointed out that none of the available instruments are based on nurses' experiences, and their efficacy has not been proved for use in nurses (Berger & Gelkopf, 2011). Given that these instruments just measure the incidence of CF and the relevant concepts, thus not satisfying the goals of this study, the development, and validation of a reliable tool for identifying the risk factors of CF in nurses is mandatory. The controversies related to similarities and differences between CF and similar phenomena like secondary vicarious traumatization, traumatic stress, and burnout (Coetzee & Klopper, 2010) have led to ambiguity and lack of recognition of the nature of compassion and its risk factors (Osofsky, Putnam, & Lederman, 2008). On the other hand, very few studies have specifically dealt with CF risk factors in nurses containing contradictory assertions on the cause-effect relations between various risk factors and CF. For example, regarding the correlation between demographic variables and CF, Hansker et al. (2015) believe that there is no difference between CF in men and women while Craigie et al. (2016) have introduced age and gender (female) as important factors in developing CF. Among the various risk factors, repeated and long-term exposure to patients in pain, suffering, and distress was one of the factors which correlated with development of CF by many scholars (Branch & Klinkenberg, 2015; Chung, 2015; Coetzee & Klopper, 2010; Frank & Adkinson, 2007; Van Mol, Kompanje, Bakker, & Nijkamp, 2014). Other CF risk factors included: demographic variables such as age and gender (Craigie et al., 2016; Hunsaker, Chen, Maughan, & Heaston, 2015), variables of work and care, that is, long exposure to patients in pain, suffering, distress, and anxiety (Craig & Sprang, 2010; Hooper, Craig, Janvrin, Wetsel, & Reimels, 2010; Li, Early, Mahrer, Klaristenfeld, & Gold, 2014; Owen & Wanzer, 2014), the fuzzy borders between nurses and patients (Beck, 2011; Branch & Klinkenberg, 2015; Showalter, 2010), and personality features, that is, high empathy, devotion, and self-sacrifice (Craigie et al., 2016; Showalter, 2010). Gates and Gillespie (2008) divided CF risk factors into three classes: nurse factors, patient factors, and work place factors. Severn, Searchfield, and Huggard (2012) and Cocker and Joss (2016) identified occupational and organizational factors as important risk factors contributing to the development of CF. Regarding the risk factors mentioned above and also the controversies in some of these parameters, this study embarked on developing a specific tool for identifying CF risk factors in nurses in the sociocultural context of Iran. Sinclair et al. (2017) believe that the presence of such an instrument will help nurse managers to identify the nurses at risk, develop effective interventions, and train them in comparative strategies and effective self-care approaches to protect and maintain them. Seeing the effect of social, political, and cultural factors in the incidence of CF (Craigie et al., 2016), this study aimed at developing and validating a specialized instrument for identifying and determining the CF risk factors in nurses in the sociocultural context of Iran.

Method

The present methodological study, conducted during 2015–2016, was part of a large-scale multicenter project on the concept of CF and consisted of two phases: first, production of instrument items using semistructured interviews with 13 nurses and literature review, and second, investigation of psychometric properties of the tool (Figure 1).

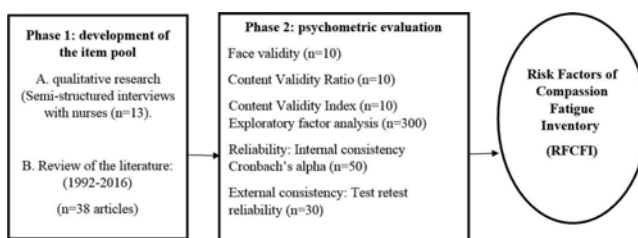


Figure 1. Procedures for instrument development.

PROCEDURES FOR INSTRUMENT DEVELOPMENT

Phase 1: Development of the Items Pool

To identify the risk factors contributing to the incidence of CF, two methods were applied: data collection using interviews and literature review, and the combination of the data from both sections which resulted in the extraction of items pool.

Qualitative Section (Semistructured Interviews With Nurses). To identify the CF risk factors in the sociocultural context of the Iranian nurses, a qualitative approach was used to contemplate on the nurses' experiences and perception of these factors. To do so, semistructured interviews were performed with 13 nurses (10 nurses and 3 nurse managers) after obtaining informed written consent and elucidating the goals of the study. Purposive sampling was used with maximal diversity in age, gender, work experience, and work location to include a wide range of attitudes on CF risk factors presented by the key informants (Speziale, Streubert, & Carpenter, 2011). The main interview questions were (a) As a nurse, have you ever got tired of patient care mentally or physically? (b) Which factors have caused mental or physical fatigue in you? (c) Under what conditions your fatigue increases? The interview then continued with some probing questions. The interview time varied between 30 and 45 minutes. Data collection reached saturation at 13th interview which yielded no new category in simultaneous analysis. The interview data were analyzed with qualitative content analysis using Graneheim and Lundman (2004) method. Regarding the qualitative approach, data collection and data analysis were done simultaneously. In so doing, each interview was listened to several times and then transcribed verbatim. Then, the transcripts were read several times to arrive at a general understanding of the main content. Then, condensed meaning units and primary codes were distilled and the codes were classified as subcategories on the basis of similarities and differences. Finally, the major categories were formed. Examples of meaning units, condensed meaning units, and codes are displayed in Figure 2.

Meaning Unit	Condensed Meaning Unit	Code
"Our wards are extremely stressful. You have the ward stress; you have the stress of ill neonates, and you have the stress of equipment shortage. (A nurse with 7-year work experience in NICU)	Ward Stressful Situations	Multiple Stressors

Figure 2. Examples of meaning units, condensed units, and codes in qualitative phase.

Review of the Literature. In this phase, literature related to CF risk factors was searched in various databases including Medline, PubMed, and Science Direct using key words such as compassion risk, vicarious traumatization, burnout, secondary traumatic stress, and nurses' professional fatigue. In addition to English databases, a manual search was done in journals that had published articles related to CF. Seeing that CF has been noticed since two decades ago, all English studies related to CF and its risk factors entered the study without considering any time interval till 2016 using the mentioned key words in the titles, abstracts, or main texts. Inaccessibility of main body text was considered as the exclusion criterion. In literature review, a few instruments were found for measuring CF and the related concepts. Yet, no instrument was found for measuring CF risk factors in nurses. After omission of the repetitious cases, 1,971 articles were found in the initial search which were imported to EndNote. After studying the paper titles, 635 cases remained. Next, after reviewing the abstracts, 38 articles with more relevance to the topic of our study were selected. The selected studies were pondered on using qualitative content analysis (Graneheim & Lundman, 2004). Subsequently, the codes related to CF risk factors were derived. Exemplars of meaning units, condensed meaning units, and codes obtained in this stage are presented in Figure 3.

To arrive at items pool, first the main categories and subcategories obtained from both qualitative sections of interview and literature review were compared and integrated, and an operational definition was provided for each. Next, several relevant items were written for each subcategory. The recommended items were revised by expert's panel and the items that conveyed the meaning of the subcategory more fully were selected.

Trustworthiness

To establish data rigor and stability, the participants were selected with maximal diversity in age, gender, and work experience. Also, the researchers tried to choose the most suitable meaning units after performing member checks, peer checks, and expert's opinions. The research team further tried to provide the follow up course of the research and characteristics of the population under study for others through vivid, accurate, and purposeful description of the research process (Elo & Kyngäs, 2008).

Phase 2: Psychometric Evaluation

In this phase, to assess the psychometric properties of Risk Factors of Compassion Fatigue Inventory (RFCFI), various methods of validation such as face, content, and construct validity (exploratory factor analysis [EFA]) were used and Cronbach's alpha and intra-class correlation coefficient (ICC) were applied in the reliability phase.

Meaning unit	Condensed meaning unit	Code
"Empathic feelings may be a risk factor for compassion fatigue"(Duarte, et al 2016).	Empathic feelings as risk factor	Empathy

Figure 3. Examples of meaning units, condensed units, and codes in review of literature phase.

Face Validity

Face validity is a subjective judgment performed by users to determine whether the instrument items are suitable for measuring the intended construct (Hardesty & Bearden, 2004). It consists of both the qualitative and quantitative methods. To establish the qualitative face validity, 10 nurses were interviewed and their viewpoints were obtained on item difficulty levels, their suitability, and the presence of ambiguity (the likelihood of misperceptions of phrases or insufficiency in word meanings). After exerting the nurses' suggested corrections in the qualitative face validity phase, the inventory was given to the same 10 nurses in the quantitative face validity phase to determine the importance of each phrase and delete the inappropriate phrases. Then, the impact scores were calculated. If the impact score was equal to or >1.5 , the phrase was rendered as suitable for the subsequent analyses and maintained (Broder, Mcgrath, & Cisneros, 2007). To estimate item effect, the following formula was used:

$$\text{Impact Score} = \text{Frequency (\%)} \times \text{Importance}$$

Content Validity. In qualitative surveying of content validity, 10 experts in nursing, instrument development, and psychology were asked to review the items for grammaticality, suitable location, and proper diction (Gungor & Beji, 2012). Then, the items underwent the final revision for literary composition by a team of coresearchers and an experienced nurse. Regarding quantitative content validity, the same 10 experts were asked to express their opinions on the necessity of the items using content validity ratio (CVR) and relevance of the items to the intended concept using content validity index (CVI) and to score them. According to Lawshe's table (1975), Ayre and Scally (2014), and the 10 experts, a CVR value of 0.62 is acceptable. Hyrkäs, Appelqvist-Schmidlechner, and Oksa. (2003) render I-CVI (Item Level CVI) of >0.79 as suitable, CVI between 0.7 and 0.79 as in need of adjustment and revision, and <0.7 as in need of deletion. Next, Scale-CVI/Ave was calculated by adding up CVI of individual items and divided by their number. A value >0.9 is favorable (Polit & Beck, 2010).

Reliability and Item Analysis Before Factor Analysis. In reliability phase, to study the internal consistency reliability of the items with Cronbach's alpha, the initial RFCFI was completed in the pilot study by 50 new nurse participants (Di Lorio, 2006). Terwee et al. (2007) recommend Cronbach's alpha of .7–.9. Quantitative item analysis was also done to assess internal consistency of the instrument (Oermann & Gaberson, 2016). A correlation coefficient >0.8 between pairs of items indicating that one of each pair may be redundant (Jones et al., 2009).

Construct Validity. EFA was used to establish construct validity which is one of the most commonly used methods for this purpose (Waltz, Strickland, & Lenz, 2010). KMO is used to investigate sample volume sufficiency with a KMO index between 0 and 1 set as suitable for factor analysis. Bartlett's test of sphericity was used to determine the fit of factor analysis model. Principal components analysis (PCA) was used to extract the factors in factor analysis. Cumulative percentage of variance (CPV), law of Eigen value >1 , and scree plot were used to facilitate the extraction of factors. No specific value is determined for CPV, yet, the minimal values of %90 and 50%–%60 have been recommended for natural sciences and humanities, respectively. Orthogonal varimax rotation which is the most commonly used rotation technique, was used to create uncorrelated factors (Williams, Onsmann, & Brown, 2010). The cut-off point of 0.4 was considered for factor loading. Williams et al. (2010) considered a sample volume of 300 as suitable for EFA. For this reason and

also considering incomplete or unreturned questionnaires (subject attrition), 360 nurses were selected using convenience sampling method. Nurses employed at hospitals affiliated to Shahid Beheshti University of Medical Sciences in Tehran and Kashan and asked to complete the questionnaire. The inclusion criteria were “holding at least a BS degree in nursing, a work experience of at least 1 year, and inclination for participation in the study.”

Reliability After Factor Analysis. To ensure of the reliability of the designed instrument, internal consistency reliability and Cronbach’s alpha coefficient were determined after factor analysis and completing of 50 questionnaires by 50 new nurses aside from the previous sample. Next, to study the external consistency, RFCFI was completed twice at 2-week intervals by 30 new nurses and the correlation between test scores and retest was estimated using ICC. Terwee et al. (2007) recommend intra-cluster correlation coefficient of at least 0.7. Furthermore, standard error of measurement (SEM) was estimated which is directly related to test reliability indicating whether the difference in various measurements is real or is due to measurement error (Terwee et al., 2007). A greater SEM indicates the lower reliability and accuracy of the tool and is suitable for comparing several tools (Atkinson & Nevill, 1998).

Statistical Data Analysis

The gleaned data were analyzed with SPSS16 using descriptive statistics, EFA, Cronbach’s alpha coefficient, and correlation coefficients.

Ethical Considerations

The approval of Committee of Ethics in Medical Research at Shahid Beheshti University of Medical Sciences was given in 31.10.2015 under no. SBMU2.REC.1394.46. All ethical principles were observed, informed written consent was obtained from each participant, information confidentiality was met, and the participants could leave the study voluntarily at any stage. Also, small gifts were considered to appreciate participation cooperation.

RESULTS

Results of Phase 1: Items Development

The Qualitative Section of Semi-structured Interviews. In the phase of interview analysis, first 584 primary codes were distilled. The similar codes were grouped into subcategories and after integrating 18 subcategories, 5 major categories including: “context-based variables, suffering from patients, personality traits, inability to help patients, and organizational challenges” were derived. To prepare the items pool, first the categories and subcategories were operationally defined and several items were recommended for each subcategory. The recommended items were investigated in several sessions by the core-researchers team. After omission of repetitious items and their logical edition, 69 items were obtained. An instance of the method of items production in the qualitative stage of the study is displayed in Table 1.

Literature Review Section. In the studies analysis phase, first 470 primary codes were obtained and grouped into 15 subcategories on the basis of similarities. Then, the similar subcategories were merged and three main categories including “personality traits, organizational challenges, and suffering from patients’ pain” were formed. Like the previous

TABLE 1. An Example of the Method of Production of Phrases in the Qualitative Section of the Study

Category	Subcategory
Organizational challenges	Challenge of resources and facilities
<p>Operational definition of organizational challenges: CF in nurses results from organizational challenges such as challenges of resources and facilities, specific properties of clinical setting like difficult and laborious work conditions, being busy with other tasks aside from care-giving, and excessive emphasis on bureaucracy and repetitious time-consuming works.</p> <p>Recommended Items:</p> <ul style="list-style-type: none"> -The number of staff in the ward is not sufficient. -The space and staff number in ward are not standard. -In the case of insufficient equipment and facilities in the ward, I mentally get upset. -If I cannot provide favorable conditions for the patient, I will suffer from feeling guilty. 	<p>Operational definition of resources and facilities: CF in nurses may result from exposure to challenges of resources and facilities like inadequate resources and manpower, nonstandard spaces and facilities, due to feeling guilty due to insufficient equipment, and inability to provide favorable conditions for the patients.</p>

TABLE 2. An Example of the Method of Production of Phrases in the Literature Review

Category	Subcategory
Patients' suffering and pain	Continual mental occupation
<p>Operational definition of patient' suffering: CF in nurses results from continuous mental occupation and agony due to patient's suffering.</p> <p>Recommended Items:</p> <ul style="list-style-type: none"> -My mind is always occupied by patients. -I remind the scenes of some patients' sufferings. -When I am immersed in patients, this affects my spirit negatively. 	<p>Operational definition of continual mental occupation: CF in nurses results from continual mental involvement by patients' problems. Even during recreational times, the nurse's mind is occupied by patients. It reflects the scene of some patients and affects negatively the nurse's mind.</p>

phase, to produce the items pool, first the operational definitions of the categories and subcategories were provided and a number of recommended items were devoted to each subcategory. After revision of the recommended items and deletion of repetitious ones, a total of 47 items were distilled. An example of the method of production of phrases in the literature review is given in Table 2.

Development of Items Pool

Ultimately, the items pool was integrated with the primary 116 items obtained from integration of the qualitative phase items (69 items) and literature review (47 items). During several sessions, the items pool was deeply delved into and 35 items were omitted due to semantic overlap and 19 due to being repetitious by general agreement. Eventually, a 62-item instrument with 4 components (context-based variables, organizational challenges, agony from patient's suffering, and inability to help patients) was developed by combining the results of literature review and interview phases and entered the psychometric measurement stage.

Results of Phase 2: Assessment of Psychometric Properties of the Instrument

Face Validity. In the qualitative face validity phase, no phrases were omitted and only the wording of four items was modified. However, in the quantitative face validity measurement, 7 items were omitted due to impact score <1.5 and the number of the items reached 55. For instance, the item: "I feel specific compassion towards patients with special diseases", was omitted due to impact score equal to 1.2.

Content Validity. In the qualitative content validity phase, the opinions of 10 experts were applied to the items and then, the items were investigated by the coresearchers team and an editor and finalized. Next, they entered the quantitative content validity phase. In this phase, 31 items were omitted on the basis of Lawshe's table (1975) owing to CVR <0.7 . In CVI estimation, 2 items with CVI <0.7 were omitted again. The CVI of the whole instrument was obtained as 0.9 using the mean approach and finally 22 items remained (Figure 4).

Results of Reliability Before Construct Validity

The Cronbach's alpha of .86 was obtained for the 22-item instrument ($n = 50$). In item analysis, no item was omitted. Subsequently, the 22-item RFCFI was prepared for construct validation (EFA) using a five-point Likert scale ranging from *strongly disagree* = 1 to *strongly agree* = 5. In construct validation with EFA, 44 out of 360 questionnaires distributed by the first researcher (MS) to nurses were incomplete and 16 questionnaires were not returned back. Hence, a total of 300 questionnaires (response rate = 83.3%, $n = 300$) entered this phase. The demographic information of the participating nurses is presented in Table 3. The KMO coefficient was 0.83 in EFA indicating sample volume sufficiency. The results of Bartlett's test of sphericity were also statistically significant (approximate Chi-square = 21.32640, $df = 231$, $p < .000$). The results of factor analysis with varimax rotation showed Eigen value >1 , and a scree plot (Figure 5) demonstrated a four-factor structure with 50.30% total variance for 20 items. Two items were omitted during factor analysis due to factor loading <0.4 . The items were assigned to the factor to which they were correlated more vividly. In the interpretation and labeling phase, the "mental concern" label was assigned to the first factor by reviewing items in this factor including seven items with variance explanation of 15.96%. Professional-organizational challenges with seven items, lack of support with three items, and personality traits (self-sacrifice and commitment) with three items were the labels considered for other factors on the basis of the content of the items. Variance percentages for the three mentioned factors were 12.73%, 12.15%, and 9.46%, respectively. Eventually, the inventory was finalized with four factors and 20 items. The labels, items number, and variance percentages are displayed in Table 4.

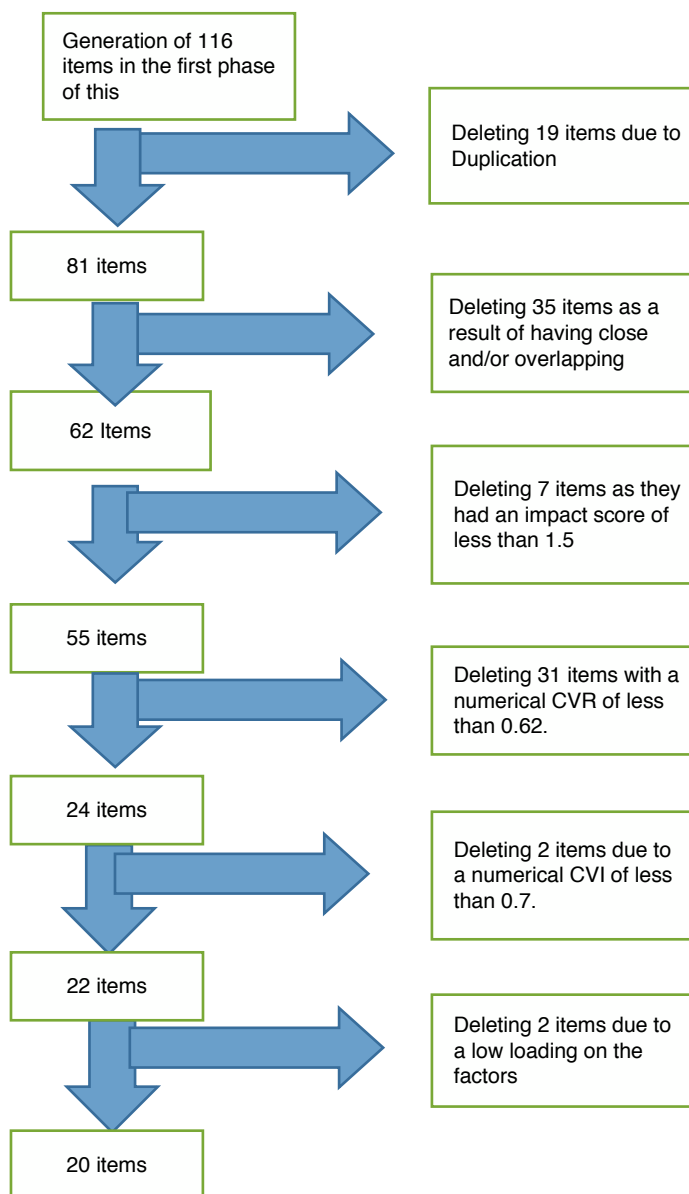


Figure 4. A summary of the instrument development and psychometric evaluation.

Reliability

Cronbach's alpha coefficient was .85 after factor analysis for 20 items and four factors indicating appropriate internal consistency of the instrument. The ICC value among test scores and test loading was 0.81. The reliability of the tool was also confirmed in the course of time. In the next stage, SEM of the inventory was 5.73 revealing the appropriate rigor and accuracy of the instrument. The values for Cronbach's alpha, ICC, SEM, mean, and standard deviation (*SD*) of every factor and those of the whole inventory are exhibited in Table 4.

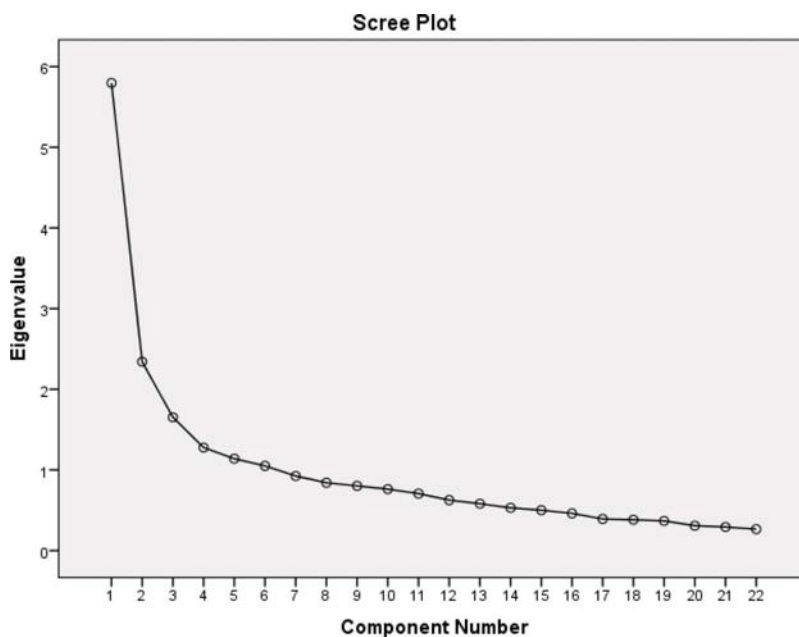


Figure 5. Scree plot for the sample in this study ($n = 300$).

TABLE 3. Demographic Information of the Participants

Variables	Mean \pm SD or Frequency	
Age (Years)	21-54 \pm 6. 86	
Gender	Female	244 (81.33)
	Male	56 (16.67)
Marital status	Married	101 (33.67)
	Single	199 (66.33)
Employment status	Provisional official	105 (35%)
	Permanent official	103 (34.34%)
	Postgraduation mandatory service	47 (15.66%)
	Under contract	45 (15%)
Educational status	Bachelor's	277 (92.34%)
	Master's	23 (7.66%)
Ward type	Intensive care units	115 (38.34%)
	Internal medicine care	101 (33.66%)
	Surgical care	42 (14%)
	Emergency department	42 (14%)
Total	300	

TABLE 4. Factors, Items, and Factor Loadings for the RFCFI ($n = 300$)

Items	Factor 1	Factor 2	Factor 3	Factor 4
Sympathetic interaction with the patient, imposes emotional burden on me	.700			
I internalize others' problems and damages	.696			
My mind is always engaged in patients	.655			
I feel agony at patients' pains and sufferings	.649			
I continually observe the distress and anxiety of the patients' associates	.588			
I continually face disease, sorrow, and sadness	.482			
The workload in the ward is heavy		.696		
I have to work in stressful situations		.686		
Managers use more punishment than rewards		.666		
People have too much expectations from nurses		.560	.488	
Low evaluation of nursing in society affects my mood and spirit at work		.470		
I enjoy intimate close relations with workmates (nurses, head nurses, and physicians)		.451		
Sympathetic and repetitious responses to patients' pain, distress, and sufferings makes me mentally exhausted		.417		

(Continued)

TABLE 4. Factors, Items, and Factor Loadings for the RFCFI ($n = 300$) (Continued)

Items	Factor 1	Factor 2	Factor 3	Factor 4
Lack of cooperation on the part of my colleagues spoils my mood and spirit			.796	
Lack of support by superiors destroys my spirit			.749	
Physicians' disrespect for nurses annoys me			.706	
I feel committed to serve others				.747
I prioritize others' needs over mine				.740
I show self-sacrificing behaviors				.677
Adjusted variance		12.73%	12.15%	9.46%
Cumulative variance		28.69%	40.84%	50.3
Cronbach's alpha ($n = 50$)		0.74	0.74	0.7
ICC (95% CI) ($n = 30$)		.69(.6-.75)	.71 (.62-.77)	.62(.44-.73)
SEM		2.98	1.16	1.36
Mean (Standard deviation)		27.71(4.10)	12.32 (2.32)	11.77(1.73)

Note. ICC = intra-class correlation coefficient; RFCFI = Risk Factors of Compassion Fatigue Inventory; SEM = standard error of measurement.

Description, Administration, and Scoring of the Instrument

RFCFI is an inventory that identifies the CF risk factors in nurses. It is a valid and reliable self-reporting tool which is readily applicable to the Iranian nursing community. It entails 20 items and four factors including mental concern (items 2, 6, 7, 8, 9, 10, and 11), professional–organizational challenges (items 12, 13, 19, 20, 22, 15, and 1), lack of support (items 14, 16, and 17), and personality traits (items 3, 4, and 5). RFCFI entails 19 positive items and 1 negative item. The respondents should mark the choices in a five-point Likert scale ranging from *strongly disagree* = 1 to *strongly agree* = 5. The items are given equal weights. The total score of the whole instrument is estimated by summing up the points of each item. A higher score indicates greater CF risk factors in nurses. A summary of the instrument development and psychometric evaluation was shown in Figure 4.

Discussion

The goal of this study was to develop and assess the properties of RFCFI in nurses. It has been developed for the first time in Iran and in the world to identify the CF risk factors in nurses. The items of the tool are derived from integration of the results of the qualitative

phase of interview with nurses and literature review and is developed in the Iranian socio-cultural context. The results of the reliability and validity phase of the instrument indicated that this inventory with four factors (domains) and 20 items relevant to the intended goals is a specialized and homogenized inventory in which all the items measure the same construct. Stamm (2010) introduced the two concepts of compassion satisfaction and compassion fatigue in proQOL model in which CF consists of “secondary traumatization stress (STS)” and “burnout.” In comparing RFCFI and proQOL, it can be said that averagely STS factor of the said model corresponds to the first factor (mental concern), and professional burnout corresponds to the second factor (professional–organizational challenges). The risk factors of mental concern in RFCFI relate to the caring aspect and the nature of service provision in nursing. The risk factors of this domain include daily long-term exposure to and observation of painful suffering patients, sympathetic interaction with the patients, and continual mental engagement with patients’ pain and suffering all leading nurses to unconsciously absorb, internalize, and even experience the patients’ problems and hurts (Boyle, 2011; Lombardo & Eyre, 2011; Mason et al., 2014; Yoder, 2010). The risk factors of the second domain (professional–organizational challenges) are related to the organization and the profession which can be divided into two subcategories: organizational challenges and professional challenges. The risk factors of organizational challenges include excessive workload, stressful work conditions, unreasonable expectations from the nurses, and the policy of more punishment than rewards by managers which are totally consistent with previous studies (Aycock & Boyle, 2009; Boyle, 2015; Craigie et al., 2016; Lombardo & Eyre, 2011; Sorenson, Bolick, Wright, & Hamilton, 2016). Professional challenges consist of items devoted to the nursing profession and its related challenges, specifically in the sociocultural context of Iran confirmed by the previous studies conducted in Iran (Farsi, Dehghan-Nayeri, Negarandeh, & Broomand, 2010; Nikbakht Nasrabadi, Emami, & Parsa Yekta, 2003). Problems such as lack of support, low evaluation of the nursing profession by the organization and society, and priority of treatment over prevention induced by physician-oriented climate governing the healthcare system in Iran, have resulted in nurses’ physical and mental fatigue from their own perspectives so that when restorative processes for regaining the lost power are not undertaken by the organization, CF will occur in nurses. The third domain of RFCFI labeled “lack of support” is very important in the incidence of CF. Hunsaker et al. (2015) and Hensel, Ruiz, Finney, and Dewa (2015) introduced “lack of work support” and “lack of social support” as risk factors to approve this finding. Moreover, Cocker and Joss (2016) determined manager’s weak support as organizational risk factors which are effective in the incidence of CF (Cocker & Joss, 2016). Branch and Klinkenberg (2015) asserted that the manager’s lack of support along with other factors affects nurses’ ability for providing safe and appropriate care. Additionally, the expansion of peer support to prevent CF has been confirmed (Bourassa, 2009). Personality traits as the fourth domain have been referred to as risk factors in previous studies so that Figley (1995) and most scholars believe that nurses with characteristics such as high sympathy, self-sacrificing behaviors, commitment, and strong inclination for help are more vulnerable to CF (Abendroth & Flannery, 2006; Perry, Dalton, & Edwards, 2010; Sung, Seo, & Kim, 2012). The professional–organizational challenges as a great category of CF risk factors indicate that prevention of CF will not be plausible by the nurses alone, rather, the community and organization also play a role in the incidence of CF (Boyle, 2015; Drury, Craigie, Francis, Aoun, & Hegney, 2014; Hunsaker et al., 2015; Owen &

Wanzer, 2014). In other words, organizations ought to provide a protective and supportive climate for nurses to enable them to provide compassionate care for patients continually without physical, emotional or cognitive damages. Also, in addition to provision of their compassion satisfaction and occupational satisfaction, nurses can promote patient satisfaction, and increase safety of patient quality care (Boyle, 2015; Drury et al., 2014; Hunsaker et al., 2015; Owen & Wanzer, 2014).

CONCLUSION

RFCFI is a self-reporting inventory used to determine the risk factors of CF in nurses with four factors and 20 items. This inventory with acceptable validity and reliability is very brief yet comprehensive and can be easily used by nurses, nurse managers, and scholars. It is the first instrument developed for assessing CF risk factors in nurses based on the sociocultural context of the Iranian community. It can be used in the healthcare system of different countries provided it is locally validated.

The Nursing Implications for Practice, Research in Nursing Practice

RFCFI increases the nurses' awareness and perception of CF risk factors. Nurses can identify the CF risk factors in themselves by this tool and maintain their own compassion and growth via self-care measures. Nurse managers also can acquire a comprehensive assessment of CF risk factors in nurses by the use of this inventory and design managerial interventions such as more endeavor for eliminating organizational challenges, social acculturation toward the professional status of nursing profession, informing nurses of CF risk factors, coping skills and strategies, provision of sufficient time for nurses' power renewal, and training in adaptation strategies and self-care of nurses' well-being to protect them leading to promoted professional satisfaction, improved quality care, and finally, organizational optimization.

In Nursing Research

Scholars may use RFCFI to assess risk factors of CF in nurses. After identifying the risk factors of CF, researchers may design some studies to identify effective intervention for prevention of CF, outcomes reduction and staff protection.

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