Burnout Syndrome Assessment Scale for Nurses Working in Intensive Care Units: Development and Validation

Abstract

Background: Stress at workplace keep individual at extreme pressure and leads to exhaustion and inability to deal with stressful situation which causes burnout. Continuous stress on workplace causes multiple physical as well as psychological manifestations. Due to more demanding job nurses are more prone to burnout syndrome at workplace. Early assessment and timely interventions to overcome burnout are key for more productive work output. The objective of the present study was to develop Burnout Syndrome Assessment Scale (BOSAS) for nurses.

Materials and Methods: A methodological design was carried out to develop BOSAS in different phases. Modified Delphi technique used for content validity. Reliability was calculated in terms of internal stability and stability of scale. Validity was measured in terms of face, content, criterion, and construct validity. Results: There were a total of 20 items in the final draft. Internal consistency was checked by Cronbach’s alpha which was 0.94. Test-retest reliability of scale was found 0.93. Pearson’s correlation was used to check inter-item correlation which was found between 0.20 and 0.40. The content validity index was 0.93. Concurrent criterion validity of scale was 0.82. Construct validity was analyzed by factor analysis, all items were loaded in 5 factors and accounted for 64.95% of variance. Conclusion: BOSAS has good validity and reliability and it can be used to assess and identify burnout among nurses.

Keywords: Burnout Syndrome Assessment Scale, development, intensive care units, nurses, validation

Introduction

Burnout syndrome is a group of positive or negative reactions of an individual toward forces from the inside or outside world which affects the individual, either one's emotional or physical well-being, or both. The individual responds to stress in ways that affect the individual, as well as their environment. Due to the overabundance of stress in our modern lives, we usually think of stress as a negative experience, but from a biological point of view, stress can be a neutral, negative, or positive experience.[1]

In general, stress is related to both external and internal factors. External factors include the physical environment, including your job, your relationships with others, your home, and all the situations, challenges, difficulties, and expectations you're confronted with on a daily basis. Stress is a fact of the inherent environment and it affects every individual either from inside or outside. Every individual responds to stress in a different way. Continuous unresolved stress leads to burnout syndrome.[2]

Maslach and her colleague Jackson described it as an inability to use proper coping strategies and cope with emotional stress at workplace and person has feelings of failure and experience exhaustion. The health care personnel especially nurse are more prone to develop the burnout syndrome due to more demanding job and high workload at workplace. As per many literatures, the nurses those working in the heavy workload and strict long shifts are more prone for burnout syndrome-like critical care nurses, intensive care nurses, and the emergency nurses then the outpatient nurses.[3] In the last few decades, Burnout is a condition that has perceived a greater attention, particularly in critical care nurses as it is highly prevalent in the occupations where professionals are dealing with human services and has more exposure to the chronic stress.[4]

Occupational psycho-mental/psycho-social stress factors include pressure of time,

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overtime, and shift work, as well as mobbing, economic pressures, and multiple work roles in job, family, and leisure activities. According to stress-strain concept, a high level of strain can result from the cumulating of both psycho-mental/psycho-social stress and a lower level of stress tolerance, which is in context of “negative stress.” When “negative stress” becomes chronic and is not dealt with adequately it leads to adverse effects on the health. According to the “person-environment misfit” concept, an imbalance between psycho-mental/psycho-social stress and individual stress tolerance is cause for the development of the development of burnout syndrome. The risk of burnout is influenced by the extent of the stress factors, deficits in personal resources, all by “social support” systems and “coping” strategies of an individual. After many discoveries related to the burnout syndrome, many questions of development of burnout are still unanswered like Is the burnout syndrome is high-level stress, or the complex interaction between the social factors (circumstances) and the individuals factors (behavior).[9]

Need of the study

Many researches are still needed, however, to establish that scientific basis for their entity. The criteria by which it might be diagnosed and classified is not well defined. There are many tools for burnout syndrome but there is no an Indian tool for burnout syndrome yet. If the other tools use in the Indian setup, the reliability and validity of the tool will be reduced because of the different setups of the Intensive Care Units (ICUs) and emergency department, facilities, registered nurses scarcity, and as well the environmental factors are also influence the tools. The tools that are already existed are not entirely for the nurses, it is for all the occupations, and the workload as well as requirement is vary from occupation to occupation. So, need of such tools that only measure the risk and occurrence of the burnout syndrome among the nurses working in high workload areas like ICU, and emergency departments.[6]

Materials and Methods

In the present study, quantitative research approach and methodological research design have been used. The objective of the present study was to develop Burnout Syndrome Assessment Scale (BOSAS) for nurses. The study was conducted in ICUs and emergency department of All India Institute of Medical Sciences Jodhpur, Rajasthan.

The sample included in study is 100 nurses working in ICUs selected by using nonprobability convenient sampling technique. Sample selection criteria were: Nurses who have continuous 6-month experience in ICUs and those who are willing to participate in study were enrolled in the study.

The data were collected in the month of January-February 2019 with BOSAS which was developed under different phases. Ethical clearance has been obtained from the Institutional Ethical Committee, AIIMS Jodhpur, Rajasthan, India (AIIMS/IEC/2018/524). Written Informed consent was obtained from the nurses involved in the study after providing a complete explanation of the research information. Confidentiality of the subjects was maintained and the study subject was given full autonomy to withdraw from the study at any time.

Results

Phase I-preliminary draft preparation

A preliminary draft of BOSAS has been prepared by reviewing available literature of burnout syndrome and its prevalence, associated factors, related to models, and previously available measures.

Current practices related to burnout syndrome in institute were also assessed and conducted focused group discussion, data were collected with the help of a focused group discussion guide from 6 nurses working in emergency and ICUs. After reviewing the content of group discussion, the conclusion drawn and suitable points were used to formulate items of scale. An exhaustive list of manifestations and impacts of burnout syndrome were prepared. Identified items categorized in some domains such as psychophysical, personal, and professional, and some items put into miscellaneous categories and pooled these all items together.

The blueprint of preliminary draft of BOSAS has been prepared with 30 selected items under four domains which are Psychophysical; Personal; Professional; and Miscellaneous. The scoring keys were developed to assess burnout syndrome and each item’s scoring will be done under the following points: Always (3), Sometimes (2), Never (1). The highest score of scale is 90 and the lowest score is 30.

Phase II – Validation and reliability of scale

The modified Delphi technique was used for content validation of the first draft and subsequent drafts of BOSAS. Eleven experts were selected from the different institutions. The first draft of the tool was circulated among 11 experts for the content validation of BOSAS. According to expert’s opinion the modifications were made in the scale drafts. Three rounds of modified Delphi technique were completed and prepared final draft of BOSAS.

Final draft of Burnout Syndrome Assessment Scale

There are two domains in the scale namely: Personal and professional domain. Each domain contains 10 items. Scoring key was prepared as always (4) often (3) sometimes (2) rarely (1), and never (0). Levels of burnout have been formed on the basis of percentage distribution to each category. There are four levels of burnout that were developed. With increasing the score on tool level burnout syndrome is also increasing [Table 1].
Choudhary, et al.: Burnout Syndrome Assessment Scale

Content validity

Content validity of the scale was calculated by evaluation of the BOSAS by panel of experts. The evaluation of scale was done through Content Validity Performa which was developed by Davis in 1992 under the 4 relevancy criteria for each item in scale: Highly relevant (4), quite relevant (3), somewhat relevant (1), and not relevant (0). Scoring was done by dichotomizing these four criteria in relevant (1) which includes highly relevant (4) and quite relevant (3); and not relevant (0) includes somewhat relevant (1) and not relevant (0). On the basis of 7 expert’s evaluation content validity index (CVI) was calculated for the items (1-CVI) and for the scale (S-CVI). The mean 1-CVI of items is 0.93, S-CVI/UA is 0.60, and S-CVI/Ave is 0.93.

Criterion related validity (concurrent validity)

In the present study, concurrent criterion validity was calculated by administering a standard scale for burnout Copenhagen burnout inventory (CBI) simultaneously with BOSAS. To measure the criterion validity correlation was established between BOSAS and CBI. The correlation coefficient was calculated by using Pearson’s correlation between the BOSAS score and CBI score, which was found a positive correlation between the BOSAS and CBI (r = 0.824; significant at the 0.01 level), which indicate better evidence of criterion validity of the BOSAS.

Construct validity

Construct validity of BOSAS was calculated by using exploratory factor analysis in which Principal Component analysis method was applied.

To proceed with the collected data for factor analysis the adequacy of the sampling as well as the eligibility of scale items was assessed by calculating Kaiser-Meyer-Olkin (KMO) value and Bartlett’s test of sphericity. The KMO value of data in this study was 0.81 which was calculated by SPSS (IBM version 16, 2019) whereas P value of Bartlett’s test of sphericity was 0.000 which was found significant. It indicates that the data were suitable for factor analysis.

The principal Component analysis extraction method was used to calculate extraction communality value of each item. Initial communality was assumed as 1 (100%) for each item. Extraction communality of items was in range of 0.40–0.82. Average communality extraction of items under scale was 0.64 which indicated that data is suitable for proceeding factor analysis.

To formulate clusters of highly interrelated items from a correlation matrix factor extraction was done. Scale had generated 5 factors/components 1,2,3,….,5. All the items of scale was loaded on factor 1–5 with value >.30 [Table 2]. So, all the items were retained in the scale. Principle component analysis with varimax rotation had generated total 5 factors with eigenvalues more than 1. The eigenvalues of 5 factors ranges between 1.113 and 7.230. All factors Factor I, Factor II, Factor III, Factor IV, and Factor V have rotational variance of 16.60, 12.50, 12.38, 12.16, and 11.30 respectively. Cumulative variance accounted by all five factors is 64.95%.

Scree plot

The Scree plot is a graph which depicts the Eigenvalues against all the factors. The point of interest is where the curve starts to flatten. In this study from Scree plot, it showed that initial 5 factors had major contribution towards total variance (point of first inflection). Subsequent to first 5 factors, the Scree plot curve is almost smoother without any more inflection. So, initial 5 factors and all the 20 items were retained on the basis of Scree plot test [Figure 1].

| Categories                | Score range | Percentage |
|---------------------------|-------------|------------|
| No burnout                | ≤20         | ≤25        |
| Mild burnout              | 21-40       | 26-50      |
| Moderate burnout          | 41-60       | 51-75      |
| Severe burnout            | 61-80       | >75        |

| Item                                             | Component |
|-------------------------------------------------|-----------|
| Physically exhausted                            | 0.74      |
| Sick without any physical reason                 | 0.84      |
| Excessive compulsion to prove myself             | 0.70      |
| Depressed in life due to current job             | 0.65      |
| Anxious about going to work                      | 0.61      |
| Lack of interest in current job                  | 0.62      |
| I am neglecting my own needs                     | 0.78      |
| Reduced commitment towards family, friends, and colleague | 0.82 |
| I remain with anticipated fear of a mishappening |           |
| I am not able to balance my personal and professional life effectively | 0.36 0.39 0.31 |
| Lack of enthusiasm towards the work              | 0.74      |
| Demoralized at work                              |           |
| Demotivated at work                              | 0.35 0.63 |
| Reduced commitment towards patient care          | 0.87      |
| I have become negligent at work and feels difficulty to accept it | 0.88 |
| I work very hard but results are not effective   | 0.66 0.34 |
| My competency is gradually decreasing            | 0.49 0.75 |
| That I need a break from my duties               | 0.81 0.53 |
| That I should change my clinical area of posting  | 0.49 0.31 |
| Detached and insensitive towards patient         | 0.74 0.76 |

Figure 1: Scree plot

Table 1: Levels of burnout based on scoring

Table 2: Rotated component matrix
Reliability of Burnout Syndrome Assessment Scale

Internal consistency of the tool was calculated by Cronbach’s alpha and it was found to be 0.94 which indicates tool was having good internal consistency.

The test-retest reliability was also calculated by the administration of BOSAS two times on the same participants with a difference of 10 days between both tests. Test-retest reliability calculated by applying Pearson’s correlation between the test and retest score of each participant. Coefficient reliability (test-retest reliability) was calculated which was found 0.93 which indicate excellent stability of scale.

To find individual contribution of each item, Item wise reliability was calculated if item deleted from the scale. Each item was deleted one by one and measures any differences in the values of Cronbach’s alpha which found that values of Cronbach’s alpha were decreased and remained the same if item deleted. So, all the 20 items were retained in the tool. Corrected item-total correlation should be 0.2 or more.

Inter-item correlation

Pearson’s correlation coefficient was applied to calculate inter-item correlation of BOSAS, which was found between 0.20 and 0.40 which is suggesting that items are reasonably homogenous; they do contain sufficiently unique variance with each other. Mean inter-item correlation was 0.32 for the BOSAS (an average of only 0.29 is needed).

Discussion

The present study was conducted to develop BOSAS for nurses working in ICUs and emergency. The study was carried out at All India institute of medical sciences, Jodhpur. The BOSAS was developed in five phases: preliminary phase, validation of preliminary draft and subsequent draft of BOSAS, pilot study, final tryout, and evaluation phase. Reliability was analyzed in terms of internal consistency which was found 0.94 by Cronbach’s alpha and test-retest reliability was analyzed with Pearson’s correlation which was found 0.93. Face and content validity was done by the expert’s opinion. CVI was calculated for content validity which was 0.93, indicates good content validity of the scale. Criterion validity was measured by establishing Pearson’s correlation between BOSAS and CBI which was found 0.82 significant at the level of 0.01. For calculation of construct validity of scale principle components factor analysis was applied which generated 5 components according to the factors. Thus, all the items were having loading value >.30 on factors which shows the BOSAS was having good construct validity.

Burnout syndrome is very common in nurses working in high workload areas like emergency, ICUs, operation theatres, etc., However, it was seen that there is lack of tools to measure the burnout. Although in recent years, few measurement tools for burnout syndrome were developed.

One of them is CBI which is developed in Denmark by Kristensen, et al. in 2005. CBI is questionnaire comprises three sub-dimensions: Personal burnout, work-related burnout, and client-related burnout. There is total 19 items in this scale. The Cronbach’s alphas for internal reliability were (0.85–0.87). The baseline correlations between the three CBI subscales were 0.72, 0.46, and 0.61. Author not measured the validity through factor analysis.[7]

Demerouti and Bakker developed a measure known as Oldenburg Burnout Inventory (OLBI), which measure burnout in any occupational group, released in 2002. The OLBI measures burnout under two dimensions: exhaustion and disengagement. There is total 16 items in this inventory each category have 8 items. Both OLBI dimensions were reliable. The reliability for both exhaustion and disengagement was 0.85.[8]

Another instrument was developed by Christina Maslach, Jackson SE, Michael P. Leiter to measure burnout in individuals who work in human services professions, named as Maslach Burnout Inventory – Human Services Survey released in 1981. Cronbach’s alpha of the subscales was 0.90, 0.79, 0.71 for emotional exhaustion, depersonalization and, personal accomplishment respectively. Test-retest reliability for these subscales was 0.82, 0.60, 0.80 for emotional exhaustion, depersonalization and, personal accomplishment respectively.[9]
Strength of the study

Available measurement instruments are developed in other countries and are for all kind of occupations, if such measures administer in Indian setup it requires linguistic changes as well many factors which will change the reliability and validity of the tool so, from the present study scale developed can be freely administer in all kind of setup and does not require any linguistic changes for administration also reliability and validity are good.

Recommendations

The study can be replicated on a large sample and in multi centers to validate the findings of the present study. A study can be conducted to assess the prevalence of burnout syndrome in different setting. An experimental study can be conducted to introduce any preventive measure for burnout syndrome. Further, a systematic review can be conducted to identify various factors that contributed in burnout syndrome development.

Conclusion

On the basis of finding on the present study, conclusion can be drawn that BOSAS has high reliability and validity values and can be used to assess the burnout syndrome among nurses in various setting.

Ethical clearance

Ethical clearance has been obtained from the Institutional Ethical Committee, AIIMS Jodhpur, Rajasthan, India (AIIMS/IEC/2018/524).

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Conflicts of interest

There are no conflicts of interest.

References

1. Stöppler MC, Dryden-Edwards R. What Causes Stress? Stress Management. Medically Reviewed on 9/18/2020. Available from: https://www.medicinenet.com/stress/article.htm.
2. Informed Health Online. Cologne, Germany: Institute for Quality and Efficiency in Health Care (IQWiG); 2006. Depression: What is Burnout? 2012 Dec 5. Available form: https://www.ncbi.nlm.nih.gov/books/NBK279286/. [Last updated on 2017 Jan 12].
3. Embriaco N, Papazian L, Kentish-Barnes N, Pochard F, Azoulay E. Burnout syndrome among critical care healthcare workers. Curr Opin Crit Care 2007;13:482-8.
4. Epp K. Burnout in critical care nurses: A literature review. Dynamics 2012;23:25-31.
5. Weber A, Jaekel-Reinhard A. Burnout syndrome: A disease of modern societies? Occup Med (Lond) 2000;50:512-7.
6. Kaschka WP, Korczak D, Broich K. Burnout: A fashionable diagnosis. Dtsch Arztebl Int 2011;108:781-7.
7. Kristensen TS, Borritz M, Villadsen E, Christensen KB. The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. Work Stress 2005;19:192-207.
8. Demerouti E, Bakker AB. The Oldenburg Burnout Inventory: A Good Alternative to Measure Burnout (and Engagement). Measurement of Burnout and Engagement. Version September 25, 2007. Available from: https://www.academia.edu/2796247/The_Oldenburg_Burnout_Inventory_A_good_alternative_to_measure_burnout_and_engagement. [Last accessed on 2019 Jan 30].
9. Maslach C, Jackson SE, Leiter MP. Maslach Burnout Inventory Manual. 3rd ed. Palo Alto, CA: Consulting Psychologists Press; 1996.