

ASSESSING PROFESSIONAL BURNOUT AMONG HOSPITAL NURSES USING THE COPENHAGEN BURNOUT INVENTORY

SIMONA GRIGORESCU¹, ANA-MARIA CAZAN², DAN GRIGORESCU³, LILIANA ROGOZEA⁴

^{1,2,3,4}Transilvania University of Braşov

Keywords: burnout, Copenhagen Burnout Inventory, nursing, psychometric properties, validation

Abstract: Aim: Nursing is considered one of the most stressful professions owing to the emotional nature of patient demands, long working hours, workload, imbalance between work and personal life and inter-professional as well as interpersonal conflicts. The main aim is to analyse the psychometric properties of the Romanian version of the Copenhagen Burnout Inventory. Materials and methods: A total of 1696 nurses working in Romanian emergency clinical hospitals were surveyed by applying the Copenhagen Burnout Inventory. Results: The confirmatory factor analysis suggests that the model which could be considered the most appropriate for the Romanian population is the three-dimensional model, including the following sub-dimensions: personal burnout, work-related burnout and patients-related burnout. Conclusions: The main contribution of this study is the adaptation of Copenhagen Burnout Inventory for the Romanian population. Stress of the medical staff must be constantly and systematically identified, so that preventive measures can be taken or early intervention be applied in every stressful situation.

INTRODUCTION

The burnout syndrome is considered to be the response of an individual to prolonged stress at work, stress that generates a negative impact on the professional satisfaction, and which may, subsequently, affect productivity, performance and well-being among professionals in many areas of activity, among which that of health, as well. Burnout is caused by a number of factors, including personal, organisational and professional issues.(1)

Nursing is considered one of the most stressful professions owing to the emotional nature of patient demands, long working hours, workload, imbalance between work and personal life and inter-professional as well as interpersonal conflicts. In addition, research showed that budget cuts and changing healthcare environments lead to higher levels of personal and work stress among nurses.(2,3)

In the last 25 years in Romania, the numerous economic changes, as well as the way in which the medical activity is conceived, organized and managed, have determined and, unfortunately, continue to determine the appearance and maintenance in the medical system organizations of a high level of stress, which can ultimately damage the mental and physical health of the employee. It is therefore vital that the stress of medical staff be constantly and systematically identified so that preventive measures can either be taken or early intervention be applied in stressful situations to improve the performance of the affected work teams and lower huge costs brought about by the influence of such negative and highly consuming factors.(4)

One of the methods used for this purpose is the evaluation by specific questionnaires. One of the most widely used questionnaires is the Copenhagen Burnout Inventory (CBI).(5) Copenhagen Burnout Inventory has three sub-dimensions: Personal burnout, Work-related burnout and Patient-related burnout.(6) The items of the three scales highlight the existence of good discrimination, good consistency

and homogeneity. CBI is considered to be a reliable and valid instrument to measure the burnout syndrome (7), being extensively used in many countries and cultures, such as Australia (8), New Zealand (9), Portugal (10), Taiwan (11), or China (12), the results proving the validity of the scale.

AIM

The main aim of the paper is to analyse the psychometric properties of The Copenhagen Burnout Inventory – the Romanian version (CBI-R) in order to assess professional burnout among nurses working in Romanian emergency hospitals. More specifically, we intent to analyse the reliability, the construct and the predictive validity of this instrument.

MATERIALS AND METHODS

The questionnaires were administered during June - July 2016.

The participants were 1696 Romanian clinic hospitals nurses. The participants were mostly female (92.6%), the low number of male participants reflecting the reality in the Romanian nursing system, this occupation being preferred mainly by women. No studies regarding the preference of male for the nursing profession were available, the only available data being the testimonials of managers who claim that men represent only 4-5% of the employees. Regarding age, 11.1% of participants were between 22 - 30 years, 56.9%, 30 - 45 years, 24.8%, 45 - 55 years and 6.9% over 55 years. 86% of the nurses work with adult patients, 13.3% with children, and 0.8% both with children and adults. The 1696 participants were working in various fields: chronic internal diseases ($N = 943$), surgical pathology ($N = 518$), serious pathology, acute or chronic ($N = 235$). Concerning the seniority, 46.6% participants have been working for more than 15 years in the field, 18.8% between 10-15 years, 14.8% between 5-10 years and 19.5% for less than 5 years.

¹Corresponding author: Simona Grigorescu, Str. Nicolae Bălcescu, Nr. 56, Braşov, România, E-mail: simo.grigorescu@yahoo.com, Phone: +40727 825150

Article received on 08.11.2018 and accepted for publication on 28.11.2018
ACTA MEDICA TRANSILVANICA December 2018;23(4):6-9

Instruments

Self-administered questionnaires were used in this research.

The Copenhagen Burnout Inventory (5) contains 19 items evaluated on a five point Likert scale. The three separate parts of the questionnaire were designed to be applied in different domains. Questions on personal exhaustion have been formulated so that all people, regardless of the cultural level, can respond. The Personal Burnout dimension refers to the personal exhaustion, to the degree of physical and mental fatigue experienced by the individual. The second dimension refers to work-related burnout, the degree of physical and psychological fatigue perceived by the individual as being related to his/her professional activity. By comparing the personal exhaustion scale with the work-related exhaustion scale, people who are tired, but who attribute the fatigue to non-working core factors, such as health or family issues, are identified. The client-related burnout (patient) is the third scale. The items in this scale refer to the degree of physical, mental fatigue and exhaustion perceived by the affected person as related to his / her work with clients (patients). For the term "client" to be correctly understood, it should be noted that when CBI is used in practice, it is used as a suitable term for a particular group of respondents.

A factual questionnaire was used in order to obtain information about the socio-demographic characteristics of the participants, such as: age, gender, seniority, working filed, type of patients.

Data analysis

The data were analysed using the Statistical Package for Social Sciences version 23. The sample was randomly split into exploratory (N=820) and confirmatory samples (N = 876), the two halves not differing on gender $\chi^2(2) = .54, p = .761$, seniority $\chi^2(3) = .88, p = .830$, specialty $\chi^2(2) = 2.66, p = .264$, marital status $\chi^2(4) = 4.64, p = .328$ or type of patients $\chi^2(1) = .485, p = .785$. Exploratory and confirmatory factor analyses were used in order to assess the validity of the CBI-R. T tests and one way ANOVA were used for the inter-individual differences concerning the burnout.

RESULTS

Exploratory Factor Analysis

In order to highlight the factor structure of the instrument, the Direct oblim method was used, assuming that the CBI dimensions are correlated. The first solution with three factors covered 60.8% of the variance, but only one factor followed the original structure of the instrument, the items of the other two factors (personal burnout and work-related burnout) being mixed in two different factors. Therefore, a two factor solution was also tested. The two factor solution covered 55.6% of the variance.

The Kaiser-Meyer-Olkin ($KMO = .927$) and Bartlett's test of sphericity ($\chi^2 = 3640.12, p < .001$) indicated that the data were suitable for factor analysis (13,14) the two factors are major factors, with eigenvalues higher than 1 (table no.1).

Table no. 1. Exploratory factor analysis for CBI-R

Items	F1	F2	Communalities
C2 How often are you physically exhausted?	.859		.635
C5 How often do you feel worn out?	.809		.683
C1 How often do you feel tired?	.797		.550
C4 How often do you think: „I can't take it anymore“?	.783		.669
C3 How often are you emotionally exhausted?	.751		.444

C6 How often do you feel weak and susceptible to illness?	.694		.443
C10 Do you feel worn out at the end of the working day?	.682		.626
C8 Do you feel burnt out because of your work?	.662		.579
C7 Is your work emotionally exhausting?	.625		.617
C11 Are you exhausted in the morning at the thought of another day at work?	.605		.548
C9 Does your work frustrate you?	.477		.522
C12 Do you have enough energy for family and friends during leisure time?	.476		.303
C17 Are you tired of working with patients?		.854	.733
C14 Do you find it frustrating to work with patients?		.842	.686
C13 Do you find it hard to work with patients?		.803	.643
C15 Does it drain your energy to work with patients?		.755	.702
C18 Do you sometimes wonder how long you will be able to continue working with patients?		.707	.513
C16 Do you feel that you give more than you get back when you work with patients?		.569	.336
Number of items	12	6	
Eigenvalues	8.15	1.86	
% of the variance	45.31%	10.33%	
Cronbach's Alfa	.91	.84	

Note: Direct oblim method, CBI-R = Copenhagen Burnout Inventory – The Romanian version, C1 – C18 = items of the inventory

The two factors have good reliability indices, Cronbach's Alfa values being high, .91 for the first factor (general burnout) and .84 for the second (patients related burnout). Cronbach's Alfa for the entire scale is .90.

Contrary to previous research, the exploratory factor analysis suggested a two factor solution. Although the authors of the instrument affirmed that the differentiation between the two scales, Personal burnout and Work-related burnout is important in order to highlight differences for different professional categories (5), our analysis did not reveal a three factor solution, an explanation being the high homogeneity of the sample.

Confirmatory Factor Analysis

In order to test the factor structure suggested by the exploratory factor analysis (EFA), we used confirmatory factor analysis (CFA). The analysis showed no evidence of multivariate outlier, the data being adequate for confirmatory factor analysis.

Table no. 2. Fit indices for the two factor model of CBI-R

Model	χ^2/df	P	CFI	TLI	AIC	RMSEA(90%CI)
Model 1 without correlated errors	8.18	.001	.883	.866	1171.30	.092 (.087-.097)
Model 2 with correlated errors	3.44	.001	.9626	.955	509.78	.054 (.045-.059)
Model 3 without correlated errors	6.10	.001	.918	.905	883.92	.077 (.070-.083)
Model 4 with correlated errors	2.68	.001	.975	.969	424.47	.045 (.039-.050)

Note. CFI: Comparative Fit Index, TLI: Tucker-Lewis Index, AIC: Akaike Information Criterion, RMSEA: Root Mean Square Error of Approximation, 90% CI: 90% confidence interval for RMSEA.

The first model (the two factor model suggested by the EFA) without correlated errors had low fit indices (table no. 2). The second model added the correlated errors suggested by the modification indices the model improving significantly. According to Hu and Bentler (1999) and Kline (2011), the fit indices obtained are acceptable (χ^2/df ratio <3, CFI and TLI >.90, RMSEA <.08) and excellent (χ^2/df <2, CFI și TLI >.95, RMSEA <.06). All items had loadings higher than .50, excepting for item 12, which indicates a high construct validity of the instrument. Item 12 (*In your free time, do you have enough energy for family and friends?*) seems to have a slightly different meaning than the other items, referring mainly to the personal life (family and friends).

Because most of the studies on CBI confirmed the original structure of the instrument, we tested through CFA also the three factor solution. We tested two models, Model 3 (three

factor model without correlated errors) and Model 4 (three factor model with correlated errors) (table no. 2). As expected, the fit indices were better for the fourth model.

The fit indices are better for the fourth model, although item 12 is still problematic, having the lowest loading in factor 3, Work-related burnout. The correlations between the three dimensions are high and statically significant, ranging between .571 and .741 ($p < .001$). The higher fit indices for the three factor model led to the conclusion that this model is the most efficient, although the EFA suggested a two factor model.

Inter-individual differences

To analyse the construct validity of the CBI-R, the inter-individual differences regarding burnout were computed. Gender differences were not analysed because of the low number of male participants. The independent t tests did not reveal significant differences between nurses working with children or with adults for the burnout dimensions: Personal burnout $t(1637) = .99, p = .321$, Patient related burnout $t(1637) = .54, p = .589$, Work-related burnout $t(1637) = .25, p = .801$, Total $t(1637) = .41, p = .680$.

The seniority revealed significant differences, showing that employees with a lower seniority had the highest level of patient related burnout and personal burnout.

The multiple comparisons Bonferroni showed that employees with a seniority lowest than five years had higher levels of patient-related and personal burnout than employees with a seniority higher than 15 years, showing the increasing experience could lead to the development of more efficient coping strategy.

The predictive validity of CBI-R

The predictive validity of the CBI-R was estimated through the associations between the burnout dimensions and the turnover intent. The turnover intent was measured through one five point Likert scale (0 = never to 4 = very often): *In the last three months, how often did you think about leaving your current job?* The Spearman correlations between the burnout dimensions and the turnover intent are positive and statically significant, ranging between .311 and .455) and showing that the employees with higher levels of burnout are more likely to think about leaving their job. The correlations between the total score and the turnover intent was .456 ($p < .001$). The results are in line with previous research (15,16), showing that higher burnout predict turnover intent.

DISCUSSIONS

The present study aimed at validating the Romanian version of the Copenhagen Burnout Inventory (5) and to explore its dimensionality in a large group of nurses. Although the exploratory factorial analysis led to a two-factor solution, the three-factor model appears to be the most appropriate for the Romanian medical population 1) personal burnout, 2) work-related burnout, and 3) patients-related burnout. The two-factor solution, originally suggested by the exploratory factorial analysis, can be explained by the extremely strong correlation between the two dimensions (work-generated burnout and patient-generated burnout), which shows some difficulty for participants to differentiate between two contexts: the personal, general and the specific context of the professional framework.

Another possible explanation may also be the low level of education on the need for correct correspondence in the voluntary participation in questionnaires in the Romanian society. This paradoxical behaviour (the questionnaires are usually anonymous) is characterized by the fact that the majority of the respondents have fears regarding the correct expression of their own opinions, which they uncover, the more they feel they do not coincide with the widely accepted ones by the mass of

the public. However, the confirmatory analysis suggests that the model considered the most suitable for the Romanian population is the three-dimensional model, the most important arguments for keeping it being the very good matching indices for this version and the overlapping with the theoretical model.

The Alfa Cronbach coefficient obtained for the entire questionnaire is .90, which shows a very high internal consistency of the instrument.

Moreover, the study highlighted strong correlations between the burnout dimensions and the work seniority of nurses. Significant statistical differences have been revealed showing that lower-seniority nurses experience a higher level of burnout generated by the relationship with patients. Thus, nurses less than five years of seniority experience significantly higher levels of patient-generated burnout than those over the seniority of 15, demonstrating that as they age, nurses develop more efficient strategies in coping with stressful situations in the professional environment, due to their vast experience, opportunities for learning or training.(17)

The study also highlighted the fact that employees who experience a higher level of exhaustion are more tempted to change their jobs. The results obtained are consistent with those of other research in the field (15,16), showing that a high level of burnout can predict the intention to leave the organization.

The results obtained support the high level of reliability and validity of the variant translated into the Romanian language of the instrument. The results are consistent with those from populations from other countries, such as Denmark (5), Australia, New Zealand (8), Portugal (10), Taiwan (11), China (12), Spain.(18)

The instrument was used for both medical professionals (most of the research cited above), and in other fields such as the educational field, teachers (9) and students (10) the results proving the reliability of the scale.

Limitations and future research directions

Future research will focus on estimating the predictive validity of the instrument as well as on the time-based stability of the results (test-retest fidelity). However, a limitation of the research, justified by the distribution at the level of the medical staff in Romania, is the very small number of male participants, which did not allow the revelation of the gender differences regarding the manifestation of the burnout.

The convergent validity of the instrument requires further investigation by analysing the association between the CBI-R dimensions and another validated instrument, such as the Maslach Burnout Scale (19) or the Oldenburg Inventory.(20)

CONCLUSIONS

The main contribution of this study is the translation into Romanian and the adaptation of an instrument with very good psychometric qualities, which allows the investigation of a specific population: the Romanian medical staff. In order to allow the generalisation of the results across the entire Romanian population, it is important to continue to research other categories of health professionals (doctors, nurses).

In addition to the very good psychometric qualities, it is worth mentioning the ease of application of the instrument as an element that allows obtaining in-depth information in a short time. Moreover, to identify the burnout syndrome arising in the members of the medical staff in hospitals could become a way to improve their wellbeing. It is sure that this fact also insures an increased quality of the patients care and safety.

Nurses could be trained on coping strategies to protect them against personal stress while preventing burnout and poor health outcomes.(21) Managerial measures could also be implemented, including improved recruitment and retention

policies in order to dominate turnover intent.(22)

REFERENCES

1. Alharbi J, Wilson R, Woods C, & Usher K. The factors influencing burnout and job satisfaction among critical care nurses: A study of Saudi critical care nurses. *Journal of Nursing Management*. 2016;24(6):708-17. doi: 10.1111/jonm.12386.
2. Biksegn A, Kenfe T, Matiwos S, & Eshetu G. Burnout status at work among Health care professionals in a tertiary hospital. *Ethiopian Journal of Health Science*. 2016;26:101-108.
3. Jennings BM. Turbulence. In R. Hughes (Ed.), *Advances in patient safety and quality: An evidence-based handbook for nurses*. Rockville, MD: Agency for Healthcare Research and Quality; 2007.
4. García-Campayo J, Puebla-Guedea M, Herrera- Mercadal P, Daudén E. Burnout syndrome and demotivation among health care personnel. Managing stressful situations: The importance of teamwork. *Actas Dermosifiliograficas*. 2016;107(5):400-406. S0001-7310(15)00458-5. doi: 10.1016/j.ad.2015.09.016.
5. Kristensen TS, Borritz M, Villadsen E, & Christensen KB. The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress*. 2005;19(3):192-207.
6. Chambers C, Frampton C, Barclay M, & McKee M. Burnout prevalence in New Zealand's public hospital senior medical workforce: A cross-sectional mixed methods study. *BMJ Open*. 2016;6:1-10. doi: 10.1136/bmjopen-2016-013947.
7. Molinero RE, Basart GQ, Moncada LS. Validation of the Copenhagen Burnout Inventory to assess professional burnout in Spain. *Revista Española de Salud Pública*. 2013;87(2):165-79. doi: 10.4321/S1135-57272013000200006.
8. Winwood P, Winefield AH. Comparing two measures of burnout among dentists in Australia. *International Journal of Stress Management*. 2004;11:282-289.
9. Milfont TL, Denny S, Ameratunga S, Robinson E, & Merry S. Burnout and Wellbeing: Testing the Copenhagen Burnout Inventory in New Zealand teachers. *Social Indicators Research*. 2008;89:169-177.
10. Duarte BC, Alvares A, Carlotto MS & Marôco J. Copenhagen Burnout Inventory - Student Version: Adaptation and transcultural validation for Portugal and Brazil. *Psicologia: Reflexão e Crítica*. 2013;26(1):87-97.
11. Chou LP, Li CY, Hu SH. Job stress and burnout in hospital employees: comparisons of different medical professions in a regional hospital in Taiwan. *BMJ Open*. 2013;4(2):1-7, doi:10.1136/bmjopen-2013-00418.
12. Yeh WY, Cheng Y, Chen CJ, Hu PY, Kristensen TJ. Psychometric properties of the Chinese version of Copenhagen burnout inventory among employees in two companies in Taiwan. *International Journal of Behavioral Medicine*. 2007;14(3):126-33.
13. Kaiser HF. An index of factorial simplicity. *Psychometrika*. 1974;39(1):31-36.
14. Bartlett MS. A note on multiplying factors for various chi-squared approximations. *Journal of the Royal Statistical Society, Series B (Methodological)*. 1954;16:296-298.
15. Schaufeli W, Enzmann D. *The burnout companion to study and practice: A critical analysis*. Boca Raton, FL: CRC Press; 1998.
16. Urien AB, Osca A. Role stressors, task-oriented norm, and jobsatisfaction: A longitudinal study. *Revista De Psicología Del Trabajo y De Las Organizaciones*. 2012;28:171-181.
17. Luan X, Wang P, Hou W, Chen L, Lou F. Job stress and burnout: A comparative study of senior and head nurses in China. *Nursing & Health Sciences*. 2017;19(2):163-169. doi: 10.1111/nhs.12328.
18. Ruiz EM, Quintero HB, Moncada Luis S. Validation of the Copenhagen Burnout Inventory to assess professional burnout in Spain. *Revista Española de Salud Pública*. 2013;87(2):165-179. doi: 10.4321/S1135-57272013000200006.
19. Maslach C, Jackson SE. *Maslach Burnout Inventory manual (2nd ed.)*. Palo Alto: Consulting Psychologists Press; 1986.
20. Demerouti E, Bakker AB, Vardakou I, & Kantas A. The convergent validity of two burnout instruments: A multitrait-multimethod analysis. *European Journal of Psychological Assessment*. 2003;19(1):12-23.
21. Alenezi AM, Aboshaiqah A, & Baker O. Work-related stress among nursing staff working in government hospitals and primary health care centres. *International Journal of Nursing Practice*; 2018. <https://doi.org/10.1111/ijn.12676>.
22. Buchan J, Aiken L. Solving nursing shortages: A common priority. *Journal of clinical nursing*. 2008;17(24):3262-3268.