



HAL
open science

The use of cluster analysis to identify different burnout profiles among nurses and care assistants for older adults

Catherine Potard, Clémence Landais

► To cite this version:

Catherine Potard, Clémence Landais. The use of cluster analysis to identify different burnout profiles among nurses and care assistants for older adults. *Geriatric Nursing*, 2021, 42 (5), pp.1135-1142. 10.1016/j.gerinurse.2021.07.005 . hal-04592977

HAL Id: hal-04592977

<https://nantes-universite.hal.science/hal-04592977v1>

Submitted on 29 May 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

The Use of Cluster Analysis to Identify Different Burnout Profiles among Nurses and
Care Assistants for Older Adults

Potard, Catherine, PhD, MSc ^{a,b} & Landais, Clémence ^a, MSc

University of Angers, France

Correspondence to:

Dr Catherine POTARD

Laboratoire de Psychologie des Pays de la Loire, EA 4638

Maison de la Recherche Germaine Tillion

Université d'Angers,

5 bis, boulevard Lavoisier

49045 Angers Cedex 1, France

Tel.: +333241226394 E-mail: catherine.potard@univ-angers.fr

Declaration of Conflicting Interests: none

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

^a Department of Psychology, University of Angers, Angers, France.

^b Psychology Laboratory of the Pays de la Loire, EA 4638, University of Angers, Angers, France.

The Use of Cluster Analysis to Identify Different Burnout Profiles among Nurses and
Care Assistants for Older Adults

Abstract

The twofold purpose of this study was to identify specific burnout patterns among nurses and care assistants for older people, and to determine whether these profiles differ according to socioprofessional variables.

A sample of 279 healthcare professionals completed an online survey comprising the Maslach Burnout Inventory and socioprofessional items. Cluster analysis identified five profiles on a burnout-engagement continuum. Participants with the *Engaged* profile had low scores on all three burnout dimensions ($p < .001$), while those with the *Burnout* profile had high scores on all three dimensions ($p < .001$). Three intermediate profiles were described. The *Disconnected* profile was characterized by higher depersonalization ($p < .001$), the *Overextended* profile by high emotion exhaustion ($p < .001$), and the *Ineffective* profile by low personal accomplishment ($p < .001$). Less experienced professional caregivers were more prone to burnout in terms of depersonalization ($p < .01$), while more experienced professional caregivers tended to have an ineffective burnout profile ($p < .01$). Identifying profiles of burnout symptoms can help to develop personalized interventions.

Keywords: burnout, nursing, professional caregivers, cluster analysis

The Use of Cluster Analysis to Identify Different Burnout Profiles among Nurses and Care Assistants for Older Adults

Introduction

Over the coming decades, the numbers of older people worldwide will continue to grow, thus increasing the need for nursing and residential care. Geriatric care is an inherent occupational stressor for healthcare professionals, potentially contributing to the development of occupational burnout syndrome. Dependent patients with multiple diseases, cognitive impairment or dementia, mood disturbances, or behavioral instability, along with the suffering of patients and their families, and end-of-life issues are just some of the many challenges that healthcare workers face on a daily basis¹. These patients generally require considerable emotional and communication resources and adjustment, owing to their high dependency and/or absence of reliable communication^{2,3}. Therefore, **professionals working** in geriatric settings, **such as** care assistants, nurses and physicians, combine a high physical and psychological workload⁴ with low social recognition and arduous working conditions (e.g., time pressure)⁵. Not surprisingly, care staff working in assisted living facilities, especially nurses, run an increased risk of burnout⁶.

As burnout mainly occurs in a helping relationship, it is primarily found in healthcare professionals. However, in the absence of a consensus on diagnostic criteria, the prevalence of burnout amongst nursing staff varies across studies⁷. A recent review reported a burnout risk score of 25-75% among healthcare professionals in geriatric settings⁸. Despite this broad range, an international consensus has been built around the figure of 25-30%. Burnout is particularly prevalent among nurses working in a geriatric setting³ and with residents with dementia⁹. A European study showed that caregivers working in long-stay geriatric services or nursing homes

were the most exhausted in work, which is often physically difficult, especially in France. For example, in France, they are off work for twice as long as their colleagues in other European countries, and mean exit rates are 61% for nurses and 68% for nursing auxiliaries in nursing homes for dependent older people. In one study among French nurses and care assistants in geriatric settings¹⁰, 50.1% of participants exhibited signs of burnout. Another recent survey showed that 8.5% of staff in French assisted living facilities belonging to one private company had burnout¹¹. Burnout has been shown to have an impact on both mental (e.g., anxiety, depression) and physical (e.g., headaches, digestive disorders, insomnia, cardiovascular diseases) health¹², and affects individuals' professional wellbeing (e.g., job satisfaction, sick leave, turnover, absenteeism)¹³. Burnout amongst nursing staff also has implications for the wellbeing of their older patients, in terms of mistreatment (e.g., abusive or neglectful behavior)¹⁴ and lower perceived quality of care¹⁵.

According to Maslach and Leiter¹⁶, *burnout* is a “syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do ‘people work’ of some kind” (p. 3). Burnout is a persistent mental state, with a set of physical and mental symptoms, that arises in response to chronic work stress. The burnout syndrome is classically described on three interrelated dimensions^{17,18}. (1) *Emotional exhaustion* refers to feeling overextended, and physically and emotionally depleted at work¹⁹. Individuals experience a loss of energy, fatigue and weakness. (2) *Depersonalization* (or cynicism) occurs when a worker shows emotional detachment or distance from patients and work colleagues. This can manifest itself in impersonal, detached and negative attitudes toward patients. Cynicism and lack of empathy can occur. (3) *Low Personal accomplishment* describes a negative self-evaluation of professional competence, efficacy, and personal achievement at work. A combination of higher

Emotional exhaustion and *Depersonalization* with lower *Personal accomplishment* is considered to be symptomatic of burnout¹⁷. Nevertheless, research has shown that the experience of burnout may differ from one individual to another, with respect to the different dimensions of burnout^{20,21}.

Early studies suggested that individuals with burnout form a homogeneous group²². More recently, however, several authors have described a more heterogeneous group, and stressed the importance of identifying its different subtypes^{20,23}. As burnout is a multidimensional construct, an overall score may be less meaningful than the pattern of subscores. In a meta-analysis of the three dimensions of burnout, Lee and Ashforth²⁴ found that each one was differentially related to behavioral and attitudinal variables. A recent alternative approach therefore suggests categorizing individuals according to their pattern of responses to these three dimensions. This would lead to the identification of specific burnout types or at-risk groups for burnout rather than a single type^{23,25}. This person-centered approach based on cluster or latent profile analyses (for a review, see²⁶) has the advantage of considering the diversity of burnout profiles. For example, at least three and possibly five burnout types may be found among diverse professionals such as police officers²⁵, psychologists²⁷, counselors²³, teachers²⁸, or healthcare employees^{18,21}.

As suggested by Lebert-Charron et al.²⁹ profiling professional caregivers based on the type of manifestations of burnout may help to identify professionals in greater difficulty, promote specific primary prevention, and allow more targeted therapeutic interventions. Nevertheless, research examining specific burnout typologies experienced by professional caregivers for older people remains limited. In a systematic review published in 2016, Mäkikangas and Kinnunen²⁶ found that fewer than 5% publications on burnout had adopted person-oriented approaches, even though these analyses provide important information about

atypical burnout profiles (e.g., depersonalization occurring alone) and their developmental trajectories. Furthermore, it should be noted that only two of these studies focused on nurses^{21,30}, and none in geriatric care settings. A system for classifying burnout patterns among health professionals working in a geriatric setting might reveal specific subtypes of burnout that would allow caregivers at risk of burnout to be identified. Person-oriented approaches can yield unique and useful information, with regard to variable-oriented approaches, that can serve to establish different or atypical burnout types, and promote preventive and personalized intervention strategies.

In this context, the purpose of the current study was twofold. First, it aimed to identify specific burnout patterns among French nurses and care assistants for older adults, based on variations in the levels of the three main burnout dimensions (i.e., *Depersonalization*, *Emotional exhaustion*, and *Personal accomplishment*). In line with Lee et al.³¹, it tested the postulate that burnout has a multiple-cluster structure rather than a one-dimensional one. Second, this study explored differences in socioprofessional variables between burnout patterns. Based on several studies that had identified negative associations between age or years of experience and burnout among health professionals^{25,30,31}, it was hypothesized that specific burnout patterns differ according to socioprofessional variables such as age or years of professional experience.

Method

Design and Participants

The present cross-sectional study was carried out in France. An online self-report survey was proposed to nurses and care assistants (or equivalent) working in a geriatric setting (i.e., rehabilitation, palliative geriatric and long-term geriatric care units, geriatric psychiatry units, or nursing homes). Participants were recruited through institutional listserv e-mails, community

health forums, and support groups dedicated to geriatric caregivers, but not specifically to problems at work or burnout. These contained a description of the study and a weblink to the online survey. All participants completed the questionnaires in the same order, and none received any remuneration. Multiple responses were not authorized. A respondent could only answer once (activation of cookies to avoid repeated participation). Data were collected from 359 questionnaires, of which 65 (18.10%) were incomplete and 15 (4.2%) were invalid, leaving 279 usable questionnaires. This study was performed in line with the principles of the Declaration of Helsinki, and recruitment and consent procedures were approved by an ethics committee. Participants read the information letter and provided their informed consent before accessing the survey.

Inclusion criteria were (1) caring for older persons, (2) age at least 18 years, and (3) French speaking. Participants were 279 French nurses (23.7%, $n = 66$), care assistants (61.6%, $n = 172$) and care auxiliaries (14.7%, $n = 41$)¹ with a mean age of 35.57 years ($SD = 10.63$, range = 19-60, median = 34.0). The majority of participants were female (98.6%, $n = 275$). They worked either part time (i.e., more than 12.5 hr per week; 46%, $n = 128$) or full time (31.2%, $n = 87$) in either an assisted living facility (96.1%, $n = 268$). The majority had a high school diploma or lower (66.3%, $n = 185$), were living with a partner (77.4%, $n = 216$), and had children (58.4%, $n = 163$). The length of work experience with older persons ranged from 6 months to 36 years ($M = 9.43$, $SD = 8.03$, median = 7.00), and participants reported working an average of 7.36 years in their current job ($SD = 7.39$, range = 0.1-36, median = 5.00). Sociodemographic and socioprofessional characteristics of the 279 nursing home caregivers are presented in Table 1.

These **were** similar to national data on the caregivers of older adults. In France, care assistants

¹ Nurses ensures care and coordinate the work of the nursing assistants. Nursing assistants are in charge of hygiene, comfort, and curative care, under the supervision of a nurse. Care auxiliaries include nursing auxiliaries, medical and psychological assistants.

are estimated to represent 67.2% of the paramedical/social staff in geriatric settings, nurses 18.5%, and care auxiliaries 14.3%, with a mean age of 37-39 years, and an over-representation of women (about 94%). Mean job tenure was 9.3 years for care assistants and 7.7 years for nurses and care auxiliaries in 2007³⁶.

Insert Table 1 here

Instruments

Demographics.

Participants answered questions about their age, sex, education level, the shifts they worked, the length of time they had spent in their current position, and the number of hours they slept on work nights.

Burnout.

Burnout was measured with the French version of the Maslach Burnout Inventory³² (MBI). This self-report measure consists of 22 items related to occupational burnout, divided into three subscales: *Emotional exhaustion* (nine items, e.g., “I feel used up at the end of the workday”), *Depersonalization* (five items; e.g., “I’ve become more callous toward people since I started this job”), and *Personal accomplishment* (eight items; e.g., “I have accomplished many worthwhile things in this job”). Participants were asked to rate the frequency of each statement on a Likert-like scale ranging from 0 (*Never*) to 6 (*Every day*). Responses were summed for each subscale, with higher scores on the *Emotional exhaustion* and *Depersonalization* subscales indicating higher burnout, but higher scores on the *Personal accomplishment* subscale indicating lower burnout. Scores on each of the three subscales were categorized as high, average, or low, in accordance with the cut-offs for French health professionals detailed in the MBI study (Dion & Tessier, 1994): high *Emotional exhaustion* was defined as a score greater than or equal to 27;

high *Depersonalization* a score greater than or equal to 10; and high *Personal accomplishment* a score lower than or equal to 33. Reliability coefficients ranged from .87 to .67.

Data Analysis

A descriptive analysis of participants' sociodemographic and occupational characteristics was undertaken, using means, standard deviations, and percentages, depending on the nature of the variables. Bivariate correlations (Spearman's r) explored the associations burnout subscales. To identify burnout profiles based on the three MBI dimensions, a cluster analysis was performed. Z scores were selected as the clustering variables, and a *two-step* analytic process was then conducted, using the SPSS® TwoStep clustering algorithm. This method allows groups to be identified without having to preselect the number of clusters. The number of clusters was determined according to the Bayesian information criterion (BIC). This is used to select the *best* cluster solution, with smaller BIC values indicating better models. Following the cluster formation, two other validation tests were carried out, to ensure that (i) the silhouette coefficient (range = -1 to 1), was $\geq .05$, and (ii) the ratio of the sizes between the largest cluster and the smallest cluster was below 2³³. Analyses of variance (ANOVAs) were also run to identify significant differences between clusters. Finally, Kruskal-Wallis ANOVAs and Dunn-Bonferroni post hoc comparisons were used to compare mean scores on sociodemographic variables according to the burnout profiles that had been identified. All the analyses were performed with SPSS 23.0®. A p value of $< .05$ was considered to be statistically significant.

Results

Prevalence of burnout symptoms and descriptive analysis of variables

Before testing the research hypotheses, basic descriptive statistics of the study's focal variables were calculated. Figure 1 shows the percentages of nurses and care assistants who had

a high, medium, or low risk of burnout according to each of the three subscales. The majority (74.2%, $n = 207$) of professional caregivers had a low burnout risk, 15.7% ($n = 44$) a moderate risk (i.e., high scores on two burnout dimensions), and 10.4% ($n = 28$) a high risk of burnout (i.e., high scores on all three burnout dimensions). Overall, 65.5% ($n = 183$) of nurses and care assistants had at least one symptom of burnout (high *Emotional exhaustion* or *Depersonalization*, or low *Personal accomplishment*). The means and standard deviations of burnout dimensions, and intercorrelations between burnout subdomains and with socio-economic variables are shown in Table 2.

Insert Figure 1 here

Relationships between burnout subdomains

Relations between burnout scores, are depicted in Table 2. *Emotional exhaustion* was positively associated with *Depersonalization* ($r = .42$, $p < .001$), with higher levels of *Emotional exhaustion* associated with higher *Depersonalization*. *Personal accomplishment* was also significantly negatively correlated with *Depersonalization* ($r = -.26$, $p < .001$) and *Emotional exhaustion* ($r = -.22$, $p < .001$). Lower *Personal accomplishment* was associated with higher *Emotional exhaustion* and *Depersonalization*. These correlations are summarized in Table 2.

Insert Table 2 here

Cluster analysis

Burnout profiles were identified by clustering the participants' standardized composite responses on the three burnout subscales, using the TwoStep cluster analysis in SPSS 24. Ward's method suggested a five-cluster solution (silhouette coefficient = .70; BIC = 345.14; ratio size =

1.85). Figure 2 shows this solution, depicting five profiles of burnout based on standardized scores. Each profile characterized a particular group of nurses and care assistants.

Insert Figure 2

Based on the patterns observed in this figure, and with reference to the typologies developed by Leiter and Maslach (2016) and Lee and colleagues (2010), the five profiles were labelled as follows: *Overextended* (Cluster 1) described people with high *Emotional exhaustion*, and relatively low *Depersonalization* and high *Personal accomplishment* ($n = 76, 27.2\%$); *Engaged* (Cluster 2) was characterized by low *Emotional exhaustion* and *Depersonalization*, and high *Personal accomplishment* ($n = 88, 31.5\%$); *Disconnected* (Cluster 3) referred to high *Depersonalization* and moderate scores on the other dimensions ($n = 40, 14.4\%$); *Ineffective* (Cluster 4) featured professionals with especially high *Personal accomplishment* and moderate scores on the other dimensions ($n = 35, 12.5\%$); and *Burnout* (Cluster 5) was characterized by high *Emotional exhaustion* and *Depersonalization*, and low *Personal accomplishment* ($n = 40, 14.3\%$). To validate this cluster solution, an ANOVA was run in the second step, to examine whether nurses displaying different profiles differed on *Emotional exhaustion*, *Personal accomplishment*, and *Depersonalization*. The ANOVA showed that there were statistically significant differences between the clusters on *Emotional exhaustion*, $F(4, 274) = 159.57, p < .001, \eta^2 = .70$, *Personal accomplishment*, $F(4, 274) = 91.03, p < .001, \eta^2 = .57$, and *Depersonalization*, $F(4, 274) = 134.28, p < .001; \eta^2 = .33$. Post hoc tests revealed that all between-cluster differences were also statistically significant. Table 3 displays the MBI subscale means for the five-profile solution, and their correlations with sociodemographic variables (age, years of professional experience, etc.).

Insert Table 3 here

Relationship between burnout profiles and socioprofessional variables

Finally, to determine the extent to which the five burnout profiles differed on sociodemographic variables, one-way ANOVAs or chi² tests were run. As observed in Table 3, the *Disconnected*, *Ineffective* and *Burnout* profiles differed significantly from the *Engaged* and *Overextended* profiles on age. Participants with the latter profiles had the highest mean scores. Furthermore, caregivers with the *Overextended* profile had more years of professional experience on average than caregivers with other profiles. Finally, *Ineffective* participants had a higher mean score on professional experience in the actual job, while participants with the *Burnout* or *Disconnected* profile had lower mean scores than their counterparts. No other significant differences were found. All details are provided in Table 4.

Insert Table 4 here

Discussion

Long considered a homogeneous/one-dimensional construct, recent research has underscored the value of using a classification system to identify types (or profiles) of burnout that better reflect its diversity of expression. Thus, the present study aimed to (1) identify burnout profiles among nurses and care assistants for older adults in France, and (2) analyze the relationship between these burnout profiles and socioprofessional characteristics. Burnout was present in this sample, with 19% of participants being categorized with a moderate-to-high risk of burnout. A substantial number of participants reported high levels of *Emotional exhaustion* (34%) and *Depersonalization* (24%), and low levels of *Personal accomplishment* (23%). These results are consistent with international³ and national^{10,11} findings on the prevalence of burnout in

professional caregivers for the older people. It should be noted that the study was conducted before the COVID-19 pandemic, and it would be interesting to examine the latter's effect on the occupational health of geriatric nurses, even if preliminary results indicate a limited impact on burnout in the short term³⁴. The longer-term effects of this phase of acute stress on healthcare workers' burnout have yet to be determined.

Burnout types among nurses and care assistants for older adults

As people can experience various patterns of burnout, a person-centered approach was used to identify different burnout profiles. In line with Leiter et al.'s study¹⁸ among healthcare workers, five profiles were identified among nurses and care assistants: *Burnout* (high on *Emotional exhaustion* and *Depersonalization*, and low on *Personal accomplishment*), *Engaged* (opposite patterns), *Overextended* (especially high on *Emotional exhaustion*), *Disconnected* (high on *Depersonalization* only), and *Ineffective* (lower on *Personal accomplishment* only). These findings were in accordance with the assumption of an engagement-burnout continuum (Leon et al., 2015), with two endpoint profiles (*Engaged*, 31.5%, and *Burnout*, 14.3%) and three intermediate profiles (*Overextended*, 27.2%, *Disconnected*, 14.4%, and *Ineffective*, 12.5%). Prior research on health workers^{18,35} had also identified these three intermediate profiles, based on high scores on a single dimension of burnout. These four profiles are consistent with the conclusion of Mäkikangas and Kinnunen's meta-analysis²⁶, emphasizing both synchrony and desynchrony between burnout symptoms.

The *Engaged* profile described nurses and care assistants who have high satisfaction and seek out interesting and meaningful work³⁶. By contrast, the *Burnout* profile described nurses and care assistants in a chronic distress situation. These professionals displayed a combination of exhausted, discouraged and alienated feelings. The *Overextended* profile describes nurses and

care assistants who lack energy and feel individual strain in the workplace. Although they report emotional and physical exhaustion, they tend to be responsive to their older patients' needs. The *Overextended* profile highlights a workload issue in line with Leiter's³⁷ process model suggesting that *Emotional exhaustion* is the first reaction to demanding work³⁸. The *Disconnected* profile describes health workers who display cynicism and withdrawal from their work activities and from other people (patients, colleagues), but who do not have low *Personal accomplishment*. *Depersonalization* was previously viewed as a defensive coping strategy with respect to *Personal accomplishment*³⁷. This pattern of devaluing and detached concern could be related to compassion fatigue within nursing practice³⁹, including in a hospice setting⁴⁰. Finally, the *Ineffective* profile describes professional caregivers for the older persons who are psychologically disconnected from their work, and less motivated. This profile tends to confirm that *Personal accomplishment* is not necessarily dependent upon *Emotional exhaustion* and *Depersonalization*^{19,21}. Lower *Personal accomplishment* is often accompanied by feelings of inefficacy and poor self-esteem²⁰. Participants' sense of professional inefficacy and failure was associated with an inability to cope effectively. The relationship between self-efficacy and *Personal accomplishment* among nurses has already been highlighted⁴¹.

Relationship between socioprofessional characteristics of caregivers and burnout profiles

The relative similarity between *Burnout* and *Disconnected* profiles suggests that in some nurses working in an elderly setting, low *Personal accomplishment* scores may be a primary warning sign of burnout⁴². Consistent with previous research⁴³, professional caregivers with either of these two profiles were significantly less experienced than their counterparts. The present finding also supports the hypothesis that younger and relatively new in the profession present higher levels of stress and burnout⁴⁴. **This suggests that age and burnout interact⁴⁵**. They

probably had poorer stress management strategies, in a context of stressful and intense demands from their working environment. Depersonalization occurs in order to distance themselves from this emotionally draining work¹³. Years working as professional caregivers for older people were significantly higher in the *Personal accomplishment* profiles of burnout, while age was more significantly related to *overextended* profile. This problem of higher reflects a particular concern with workload^{16,20} for older caregivers. These results also suggested that older more experienced workers suffered lower burnout on *Depersonalization* component; but they are over-represented in the *ineffective* profile, reflecting a low professional self-efficacy²⁰. Finally, the level of education, type of employment, working hours or family status did not have an effect on burnout symptoms. The findings in the literature on this topic were uncertain⁴⁴.

Limitations and suggestions for future studies

The present study had several limitations that need to be taken in account. First, as the data came from self-reports collected via the Internet, there may have been a response bias. Online questionnaires generate less social desirability, but have a higher nonresponse rate than face-to-face surveys⁴⁵. Future research should consider other measurement methods, such as interviews or observations, and replicate these findings with a more representative sample. Second, the fact that all participants were recruited online limits the generalizability of results. The sample was relatively small and only indicative of a convenience sample of practicing **nurses and care assistants in France. Further research should be expanded to include national and international samples of healthcare professionals in geriatric care. These might also include physician assistants and physicians**³. Third, the cross-sectional design of the present study meant that causal relationships between variables could not be confirmed. **Another methodological limitation is that the TwoStep cluster analysis is highly sensitive to the input data and the nature**

of the chosen algorithm⁴⁶. A longitudinal study with a larger, more diverse sample of older nurses to trace changes in burnout profiles over time is needed to fully test both the intercorrelations and causal ordering of the constructs in this study. The relationship of personal accomplishment to other burnout dimensions also requires further investigation²⁸. Finally, it would be useful to investigate the relative importance of environmental factors that can influence stress in burnout, especially aspects of the nursing practice environment such as nurse manager ability, leadership and support of nurses, or staffing and resource adequacy⁴⁷. It is also important to extend this research by including other potential personal factors of likely importance, such as self-esteem, perceived control, and perceived social support.

Conclusion and implications for practice

Adopting a person-centered approach, this study investigated burnout profiles among nurses and care assistants in a geriatric setting, and the associations between these profiles and socioprofessional characteristics. It identified four unique profiles of burnout (plus an *Engaged* profile) that differed from each other in terms of burnout symptom severity and socioprofessional characteristics. These findings highlighted the usefulness of investigating the development of burnout in nurses via burnout profiles, rather than individual scores on each of the three dimensions. The burnout profiles identified in the present study expand the notion that burnout is a multidimensional construct in an elderly nursing context. Concerning relationships with demographic variables, including sex, age, and family status; and professional attributes including length of experience and educational level, the present findings were inconclusive, in accordance with previous studies⁴⁴. These findings suggest that low professional experience is a potential risk factors for burnout.

The distinct clusters of nurses and care assistants, based on burnout symptoms, suggest a need for customized interventions for these different groups. For example, mindfulness training for nursing staff or individual coping interventions might be recommended for *Overextended* nurses and care assistants, as these programs are reported to be effective in reducing *Emotional exhaustion*^{48,49}. Team-based and participatory programs (e.g., social support interventions⁵⁰) could be an appropriate means of increasing *Personal accomplishment*^{44,51}, and particularly relevant for the *Disconnected* group. These interventions could be particularly beneficial for junior nurses or care assistants⁵². Prevention and improvement of negative organizational conditions in geriatric settings could be used to reinforce professionals' sense of self-efficacy and reduce workload, thereby decreasing *Depersonalization*⁵³ and *Emotional exhaustion*⁴⁴. For example, adopting nursing models rather than medical models of care and/or promoting organizational empowerment⁴⁴ is a promising way of preventing caregiver burnout. A combination of both personal and organizational interventions is recommended to ensure lasting positive effects⁵⁴.

References

1. Nolan L. Caring for people with dementia in the acute setting: A study of nurses' views. *British Journal of Nursing*. 2007;16(7):419-422. doi:10.12968/bjon.2007.16.7.23245
2. Adibelli D, Kılıç D. Difficulties experienced by nurses in older patient care and their attitudes toward the older patients. *Nurse Education Today*. 2013;33(9):1074-1078. doi:10.1016/j.nedt.2012.04.002
3. Cocco E. How much is geriatric caregivers burnout caring-specific? Questions from a questionnaire survey. *Clin Pract Epidemiol Ment Health*. 2010;6(1):66-71. doi:10.2174/1745017901006010066
4. Kubicek B, Korunka C, Ulferts H. Acceleration in the care of older adults: new demands as predictors of employee burnout and engagement. *J Adv Nurs*. 2013;69(7):1525-1538. doi:10.1111/jan.12011
5. Molina-Praena J, Ramirez-Baena L, Gómez-Urquiza J, Cañadas G, De la Fuente E, Cañadas-De la Fuente G. Levels of burnout and risk factors in medical area nurses: A meta-analytic study. *IJERPH*. 2018;15(12):2800. doi:10.3390/ijerph15122800
6. Mantzorou M, Koukia E. Professional burnout of geriatric nurses caring for elderly people with dementia. *Perioperative Nursing*. 2018;7:6-26. doi:10.5281/ZENODO.1401170
7. Bianchi R, Schonfeld IS, Laurent E. Burnout: Absence of binding diagnostic criteria hampers prevalence estimates. *International Journal of Nursing Studies*. 2015;52(3):789-790. doi:10.1016/j.ijnurstu.2014.12.008
8. Sanchez S, Mahmoudi R, Moronne I, Camonin D, Novella JL. Burnout in the field of geriatric medicine: Review of the literature. *European Geriatric Medicine*. 2015;6(2):175-183. doi:10.1016/j.eurger.2014.04.014

9. Costello H, Cooper C, Marston L, Livingston G. Burnout in UK care home staff and its effect on staff turnover: MARQUE English national care home longitudinal survey. *Age and Ageing*. 2020;49(1):74-81. doi:10.1093/ageing/afz118
10. Estry-Behard M, Chaumon E, Garcia F, et al. La souffrance au travail en gériatrie. Comprendre et agir [Suffering at work in geriatrics. Understanding and acting]. *La Revue Francophone de Gériatrie et de Gériatriologie*. 2013:6-26.
11. Zawieja P, Benattar L. Burnout des soignants en gériatrie : prévalence et déterminants dans 185 établissements français [Health staff burnout in geriatrics: Prevalence and determinants in 185 French facilities]. *NPG Neurologie - Psychiatrie - Gériatrie*. 2019;19(113):286-293. doi:10.1016/j.npg.2019.06.003
12. Harrad R, Sulla F. Factors associated with and impact of burnout in nursing and residential home care workers for the elderly. *Acta Bio Medica Atenei Parmensis*. 2018;89(7-S):60-69. doi:10.23750/abm.v89i7-S.7830
13. Leiter MP, Maslach C. Nurse turnover: the mediating role of burnout. *Journal of Nursing Management*. 2009;17(3):331-339. doi:10.1111/j.1365-2834.2009.01004.x
14. Neuberger M, Železnik D, Meštrović T, Ribić R, Kozina G. Is the burnout syndrome associated with elder mistreatment in nursing homes: Results of a cross-sectional study among nurses. *Archives of Industrial Hygiene and Toxicology*. 2017;68(3):190-197. doi:10.1515/aiht-2017-68-2982
15. Schmidt SG, Dichter MN, Bartholomeyczik S, Hasselhorn HM. The satisfaction with the quality of dementia care and the health, burnout and work ability of nurses: A longitudinal analysis of 50 German nursing homes. *Geriatric Nursing*. 2014;35(1):42-46. doi:10.1016/j.gerinurse.2013.09.006

16. Maslach C, Leiter MP. Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry*. 2016;15(2):103-111. doi:10.1002/wps.20311
17. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol*. 2001;52(1):397-422. doi:10.1146/annurev.psych.52.1.397
18. Leiter MP, Maslach C. Latent burnout profiles: A new approach to understanding the burnout experience. *Burnout Research*. 2016;3(4):89-100. doi:10.1016/j.burn.2016.09.001
19. Maslach C. What have we learned about burnout and health? *Psychology & Health*. 2001;16(5):607-611. doi:10.1080/08870440108405530
20. Demerouti E, Verbeke WJMI, Bakker AB. Exploring the relationship between a multidimensional and multifaceted burnout concept and self-rated performance. *Journal of Management*. 2005;31(2):186-209. doi:10.1177/0149206304271602
21. Önder Ç, Basim N. Examination of developmental models of occupational burnout using burnout profiles of nurses. *Journal of Advanced Nursing*. 2008;64(5):514-523. doi:10.1111/j.1365-2648.2008.04818.x
22. Schaufeli WB, Van Dierendonck D. A cautionary note about the cross-national and clinical validity of cut-off points for the Maslach Burnout Inventory. *Psychol Rep*. 1995;76(3-S):1083-1090. doi:10.2466/pr0.1995.76.3c.1083
23. Lee SM, Cho SH, Kissinger D, Ogle NT. A typology of burnout in professional counselors. *Journal of Counseling & Development*. 2010;88(2):131-138. doi:10.1002/j.1556-6678.2010.tb00001.x
24. Lee RT, Ashforth BE. A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*. 1996;81(2):123-133. doi:10.1037/0021-9010.81.2.123

25. Loo R. A typology of burnout types among police managers. *Policing*. 2004;27(2):156-165. doi:10.1108/13639510410536797
26. Mäkikangas A, Kinnunen U. The person-oriented approach to burnout: A systematic review. *Burnout Research*. 2016;3(1):11-23. doi:10.1016/j.burn.2015.12.002
27. Berjot S, Altintas E, Grebot E, Lesage F-X. Burnout risk profiles among French psychologists. *Burnout Research*. 2017;7:10-20. doi:10.1016/j.burn.2017.10.001
28. Jin YY, Noh H, Shin H, Lee SM. A typology of burnout among Korean teachers. *Asia-Pacific Edu Res*. 2015;24(2):309-318. doi:10.1007/s40299-014-0181-6
29. Lebert-Charron A, Dorard G, Wendland J, Boujut E. Who are and are not the burnout moms? A cluster analysis study of French-speaking mothers. *Journal of Affective Disorders Reports*. 2021;4:100091. doi:10.1016/j.jadr.2021.100091
30. Rudman A, Gustavsson JP. Early-career burnout among new graduate nurses: A prospective observational study of intra-individual change trajectories. *International Journal of Nursing Studies*. 2011;48(3):292-306. doi:10.1016/j.ijnurstu.2010.07.012
31. Lee J, Puig A, Kim Y-B, Shin H, Lee JH, Lee SM. Academic burnout profiles in Korean adolescents. *Stress and Health*. 2010;26(5):404-416. doi:10.1002/smi.1312
32. Dion G, Tessier R. Validation de la traduction de l'Inventaire d'épuisement professionnel de Maslach et Jackson [Validation of a French translation of the Maslach Burnout Inventory (MBI)]. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement*. 1994;26(2):210-227. doi:10.1037/0008-400X.26.2.210
33. Everitt B, Landau S, Leese M, Stahl D. *Cluster Analysis*. 5th ed. Chichester: Wiley-Blackwell; 2011. doi:10.1002/9780470977811.ch8

34. El Haj M, Allain P, Annweiler C, et al. Burnout of healthcare workers in acute care geriatric facilities during the COVID-19 crisis: An online-based study. *J Alzheimers Dis.* 2020;78(2):847-852. doi:10.3233/JAD-201029
35. Maslach C, Leiter M. Early predictors of job burnout and engagement. *The Journal of Applied Psychology.* 2008;93:498-512. doi:10.1037/0021-9010.93.3.498
36. Keyko K, Cummings GG, Yonge O, Wong CA. Work engagement in professional nursing practice: A systematic review. *International Journal of Nursing Studies.* 2016;61:142-164. doi:10.1016/j.ijnurstu.2016.06.003
37. Leiter MP. Burnout as a developmental process: Consideration of models. In: *Professional Burnout: Recent Developments in Theory and Research.* Series in applied psychology: Social issues and questions. Taylor & Francis; 1993:237-250.
38. Greenglass ER, Burke RJ, Fiksenbaum L. Workload and burnout in nurses. *J Community Appl Soc Psychol.* 2001;11(3):211-215. doi:10.1002/casp.614
39. Peters E. Compassion fatigue in nursing: A concept analysis. *Nurs Forum.* 2018;53(4):466-480. doi:10.1111/nuf.12274
40. Keidel GC. Burnout and compassion fatigue among hospice caregivers. *Am J Hosp Palliat Care.* 2002;19(3):200-205. doi:10.1177/104990910201900312
41. Gibbons C. Stress, coping and burn-out in nursing students. *International Journal of Nursing Studies.* 2010;47(10):1299-1309. doi:10.1016/j.ijnurstu.2010.02.015
42. van Dierendonck D, Schaufeli WB, Buunk BP. Toward a process model of burnout: Results from a secondary analysis. *European Journal of Work and Organizational Psychology.* 2001;10(1):41-52. doi:10.1080/13594320042000025

43. Narumoto J, Nakamura K, Kitabayashi Y, Shibata K, Nakamae T, Fukui K. Relationships among burnout, coping style and personality: Study of Japanese professional caregivers for elderly. *Psychiatry Clin Neurosci*. 2008;62(2):174-176. doi:10.1111/j.1440-1819.2008.01751.x
44. Dall'Ora C, Ball J, Reinius M, Griffiths P. Burnout in nursing: a theoretical review. *Human Resources for Health*. 2020;18(1):41. doi:10.1186/s12960-020-00469-9
45. Heerwegh D, Loosveldt G. Face-to-face versus web surveying in a high-internet-coverage population: Differences in response quality. *Public Opinion Quarterly*. 2008;72(5):836-846. doi:10.1093/poq/nfn045
46. Marquand AF, Wolfers T, Mennes M, Buitelaar J, Beckmann CF. Beyond lumping and splitting: A review of computational approaches for stratifying psychiatric disorders. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*. 2016;1(5):433-447. doi:10.1016/j.bpsc.2016.04.002
47. Rees CS, Eley R, Osseiran-Moisson R, et al. Individual and environmental determinants of burnout among nurses. *J Health Serv Res Policy*. 2019;24(3):191-200. doi:10.1177/1355819619840373
48. Luken M, Sammons A. Systematic review of mindfulness practice for reducing job burnout. *Am J Occup Ther*. 2016;70(2):1-10. doi:10.5014/ajot.2016.016956
49. Lee H-F, Kuo C-C, Chien T-W, Wang Y-R. A meta-analysis of the effects of coping strategies on reducing nurse burnout. *Applied Nursing Research*. 2016;31:100-110. doi:10.1016/j.apnr.2016.01.001
50. Woodhead EL, Northrop L, Edelstein B. Stress, social support, and burnout among long-term care nursing staff. *J Appl Gerontol*. 2016;35(1):84-105. doi:10.1177/0733464814542465

51. Aryankhesal A, Mohammadibakhsh R, Hamidi Y, et al. Interventions on reducing burnout in physicians and nurses: A systematic review. *Med J Islam Repub Iran*. 2019;33:77.

doi:10.34171/mjiri.33.77

52. Kolthoff KL, Hickman SE. Compassion fatigue among nurses working with older adults.

Geriatric Nursing. 2017;38(2):106-109. doi:10.1016/j.gerinurse.2016.08.003

53. Permarupan PY, Al Mamun A, Hayat N, Saufi RA, Samy NK. Nursing management challenges: Effect of quality of work life on depersonalization. *International Journal of*

Healthcare Management. Published online February 20, 2020:1-10.

doi:10.1080/20479700.2020.1728924

54. Awa WL, Plaumann M, Walter U. Burnout prevention: A review of intervention programs.

Patient Education and Counseling. 2010;78(2):184-190. doi:10.1016/j.pec.2009.04.008

Table 1 Characteristics of the 279 professional caregivers.

		<i>N</i> (%)	<i>M</i> (<i>SD</i>) [Range]
Sociodemographic characteristics			
Sex	Female	275 (98.6)	
	Male	4 (1.4)	
Age (years)			36.00 (10.47) [19-60]
Living place	Urban	145 (52.0)	
	Peri urban	68 (24.4)	
	Rural	61 (21.6)	
Familial status	Single without children	39 (14.0)	
	Single with children	24 (8.6)	
	In a couple without children	77 (27.6)	
	In a couple with children	139 (49.8)	
Natural caregiver	Yes	28 (10.0)	
	No	251 (90.0)	
Socio-professional characteristics			
Profession	Nurse	66 (23.7)	
	Nursing assistant	172 (61.6)	
	Care auxiliaries	41 (14.8)	
Years of experience	In the profession		9.61 (8.27) [.5-36]
	With older persons		9.43 (8.03) [.5-36]
	In current work		7.37 (7.40) [.5-36]
Full time	Yes	87 (31.2)	
	No, at half time or more	128 (46.0)	
	No, less than half time	64 (22.9)	
Type of care facilities	Nursing homes for dependent older	225 (80.6)	

	persons	
	Hospital / clinic	42 (15.1)
	Home care institutions	12 (4.3)
Workplace	Urban	68 (24.4)
	Peri urban	131 (46.9)
	Rural	80 (28.7)

Table 2 Spearman correlation coefficients for burnout subscales, and means (standard deviations) for the **Maslach Burnout Inventory**.

Variable	1	2	3
1. Emotional exhaustion	—		
2. Personal accomplishment	-.22***	—	
3. Depersonalization	.42***	-.26***	—
Mean	22.61	38.74	7.34
<i>SD</i>	11.37	6.20	6.10

Note. *** $p < .001$.

Table 3 Mean (standard deviation) scores for each burnout profile, and results of ANOVA and post hoc comparisons.

		Cluster 1 Overextended <i>n</i> = 76 (27.2%)	Cluster 2 Engaged <i>n</i> = 88 (31.5%)	Cluster 3 Disconnected <i>n</i> = 40 (14.4%)	Cluster 4 Ineffective <i>n</i> = 35 (12.5%)	Cluster 5 Burnout <i>n</i> = 40 (14.3%)	Comparison groups		
Dimensional variables		Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	<i>U</i>	<i>p</i>	Post hoc comparisons
Burnout dimensions	Emotional exhaustion	30.18 (6.68)	12.18 (5.99)	21.75 (5.73)	15.74 (6.91)	38.05 (5.81)	159.6	.001	C.5 > C.1 > C.3 > C.4 > C.2
	Depersonalization	4.78 (3.16)	3.39 (2.86)	14.20 (3.92)	5.31 (3.67)	15.80 (4.90)	134.3	.001	C.5 > C.3 > C. 4 & C.1 > C.2
	Personal accomplishment	40.65 (3.70)	42.69 (3.16)	40.18 (3.84)	26.20 (6.55)	33.30 (4.12)	91.0	.001	C.4 < C.5 < C.1 & C.3 < C.2

Note. C.: cluster. The names given to the clusters are those chosen by the researchers to best describe the type of individuals within each one.

Table 4 Socioprofessional information of 5 clusters.

	Cluster 1 Overextended <i>n</i> = 76 (27.2%)	Cluster 2 Engaged <i>n</i> = 88 (31.5%)	Cluster 3 Disconnected <i>n</i> = 40 (14.4%)	Cluster 4 Ineffective <i>n</i> = 35 (12.5%)	Cluster 5 Burnout <i>n</i> = 40 (14.3%)	Comparison groups			
Dimensional variables	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	<i>U</i>	<i>p</i>	Post hoc comparisons	
Age	36.39 (10.90)	36.67 (11.48)	34.20 (9.94)	34.80 (10.26)	33.63 (9.07)	55.8	.02	C.1 & 2 > C. 3, 4 & 5	
Professional experience	10.05 (8.25)	9.77 (9.46)	9.46 (8.48)	8.28 (7.13)	9.71 (7.96)	21.3	.07	--	
Professional experience among older people	10.13 (7.65)	9.52 (8.64)	9.11 (7.97)	9.33 (8.10)	8.34 (7.38)	48.1	.05	C.1 > all others	
Professional experience in actual job	7.67 (6.97)	7.48 (8.01)	6.04 (5.83)	8.89 (8.03)	6.25 (7.22)	71.6	.01	C.4 > all others C.3 & C.5 < all others	
Categorical variables	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>Chi</i> ²	<i>p</i>	Post hoc comparisons	
Familial status	Single without children	11 (14.5)	11 (12.5)	5 (12.5)	8 (22.9)	4 (10.0)	10.2	.60	--
	Single with children	9 (11.8)	7 (8.0)	3 (7.5)	1 (2.9)	4 (10.0)			
	In a couple without children	19 (25.0)	29 (33.0)	9 (22.5)	12 (34.3)	8 (20.0)			
	In a couple with children	37 (48.7)	41 (46.6)	23 (57.5)	14 (40.0)	24 (60.0)			
Living place	Urban	43 (58.1)	36 (41.9)	25 (62.5)	16 (47.1)	26 (65)	12.6	.13	--
	Peri urban	15 (20.3)	24 (27.9)	10 (25.0)	9 (26.5)	10 (25.0)			
	Rural	16 (21.6)	26 (30.2)	5 (12.5)	9 (26.5)	4 (10.0)			
Education level	Less than high-school diploma	32 (42.1)	30 (34.1)	16 (40.0)	12 (34.3)	14 (35.0)	4.69	.79	--
	High-school diploma	17 (22.4)	29 (33.0)	11 (27.5)	9 (25.7)	15 (37.5)			
	High-school diploma + 2/3 yrs	27 (35.5)	29 (33.0)	13 (32.5)	14 (40.0)	11 (27.5)			
Natural caregiver	No	66 (86.8)	77 (87.5)	37 (92.5)	33 (94.3)	38 (95)	3.54	.47	--
	Yes	10 (13.2)	11 (12.5)	3 (7.5)	2 (5.7)	2 (5.0)			
Profession	Nurse	15 (19.7)	22 (25)	9 (22.5)	12 (34.3)	8 (20.0)	4.18	.84	--
	Nursing assistant	50 (65.8)	53 (60.2)	24 (60.0)	20 (57.1)	25 (62.5)			

	Care auxiliaries	11 (14.5)	13 (14.8)	7 (17.5)	3 (8.6)	7 (17.5)			
Type of care facilities	Nursing homes for dependent older persons	64 (84.2)	71 (80.7)	29 (72.5)	27 (77.1)	34 (85.0)	7.01	.53	--
	Hospital / clinic	10 (13.2)	11 (12.5)	8 (20.0)	7 (20.0)	6 (15.0)			
	Home care institutions	4 (2.6)	6 (6.8)	3 (7.5)	1 (2.9)	0 (0.0)			
Workplace	Urban	21 (27.6)	21 (23.9)	5 (12.5)	9 (25.7)	12 (30.0)			
	Peri urban	36 (47.4)	37 (42.0)	20 (50.0)	18 (51.4)	20 (50.0)	7.77	.45	--
	Rural	19 (25.0)	30 (34.1)	15 (37.5)	8 (22.9)	8 (20.0)			

Note. C.: cluster. The names given to the clusters are those chosen by the researchers to best describe the type of individuals within each one.

Figure to be inserted

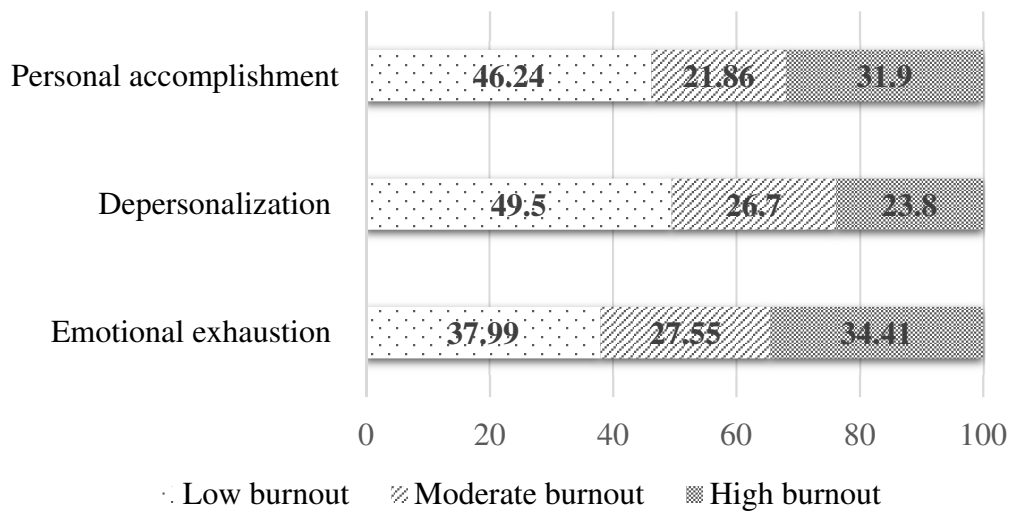


Figure 1. Percentages of professional caregivers reporting emotional exhaustion, depersonalization and personal accomplishment, by risk of burnout ($n = 202$)

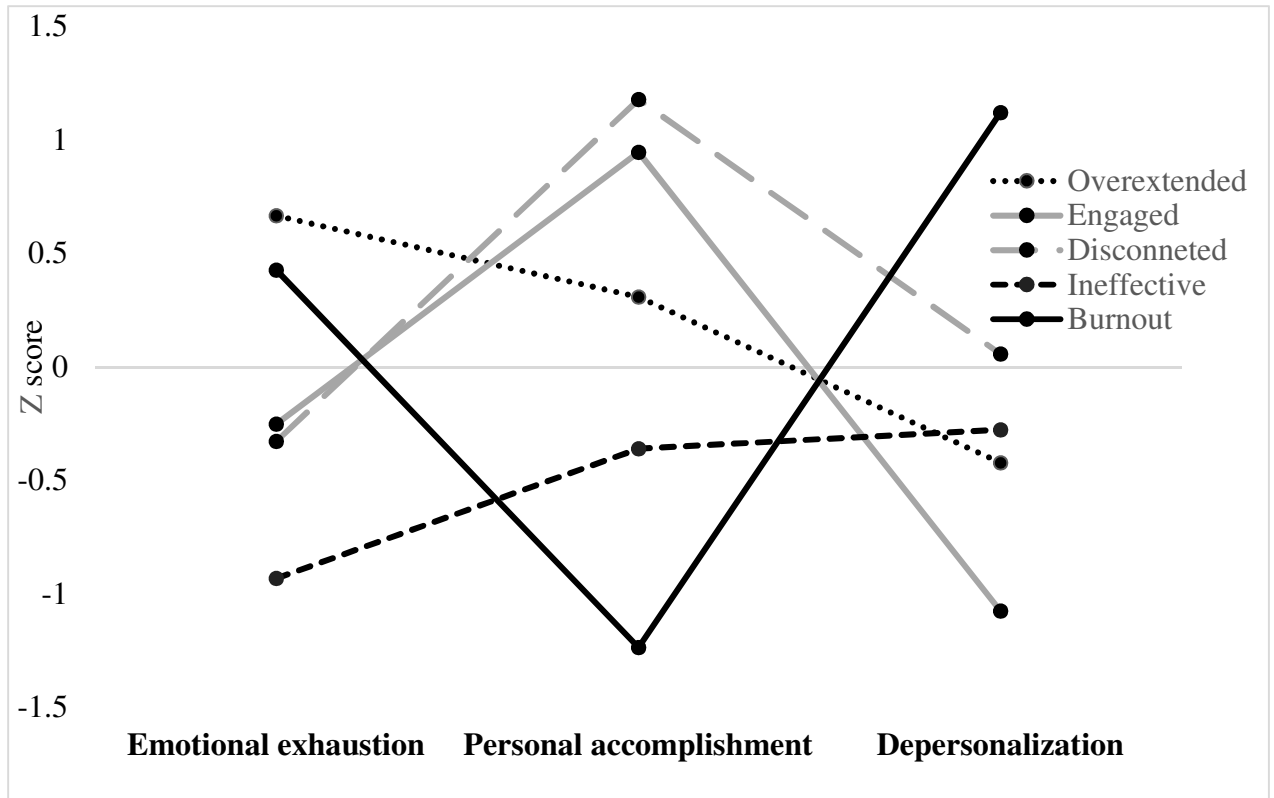


Figure 2. Graphic representation of the five-cluster solution, showing z-scores on the three subscales of the MBI