



Linking medical faculty stress/burnout to willingness to implement medical school curriculum change: a preliminary investigation

Zeinab Arvandi MSc,¹ Amirhossein Emami MD,² Nazila Zarghi PhD Candidate in Medical Education,^{3,*} Seyed Mohammad Alavinia PhD, MD,^{4†} Mandana Shirazi PhD^{5,6} and Sagar V. Parikh MD^{7‡}

¹Staff, EDO, Faculty of Dentistry, Tehran University of Medical Sciences (TUMS), Tehran, Iran

²Associate Professor, Department of Medical Education, Tehran University of Medical Sciences (TUMS), Tehran, Iran

³PhD Candidate in Medical Education, School of Medicine, Tehran University of Medical Sciences (TUMS), Tehran, Iran

⁴Assistant Professor, Ministry of Health and Medical Education, Tehran, Iran

⁵Associate Professor, EDC, Tehran University of Medical Sciences (TUMS), Tehran, Iran

⁶Associate Professor, Clinical Science and Education, Karolinska Institutet, Stockholm, Sweden

⁷Professor, Psychiatry, Toronto University, Toronto, Canada

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Correspondence

Dr Mandana Shirazi

EDC, No 57, Hojatdoost Alley, Naderi St.

Keshavarz Blvd. Tehran, Iran

LIME

Karolinska Institutet

Tomtebooda Street, Solna Campus

Stockholm 17177

Sweden

E-mail: Mandana.Shirazi@ki.se

*Faculty Member of EDC (Education Development Center), Mashhad, Iran.

†Present address: Department of Epidemiology, North Khorasan, Bojnurd University of Medical Sciences, Bojnurd, Iran.

‡Present address: Department of Psychiatry, University of Michigan, Ann Harbor, USA.

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Abstract

Rationale, aims and objectives Balancing administrative demands from the medical school while providing patient support and seeking academic advancement can cause personal hardship that ranges from high stress to clinically recognizable conditions such as burnout. Regarding the importance of clinical faculties' burnout and its effects on different aspects of their professional career, this study was conducted and aimed to evaluate the relationship between willingness to change teaching approaches as characterized by a modified stage-of-change model and measures of stress and burnout.

Methods This descriptive analytic study was conducted on 143 clinical faculty members of Tehran University of Medical Sciences in Iran. Participants were asked to complete three questionnaires: a modified stages of change questionnaire the Maslach Burnout Inventory and the General Health Questionnaire. Data were analysed by SPSS: 16 using non-parametric statistical tests such as multiple regression and ICC (intra-class coefficient) and Spearman correlation coefficient test.

Result A significant relationship was found between faculty members' readiness to change teaching approaches and the subscales of occupational burnout. Specifically, participants with low occupational burnout were more likely to be in the action stage, while those with high burnout were in the attitude or intention stage, which could be understood as not being ready to implement change. There was no significant correlation between general health scores and stage of change.

Conclusions We found it feasible to measure stages of change as well as stress/burnout in academic doctors. Occupational burnout directly reduces the readiness to change. To have successful academic reform in medical schools, it therefore would be beneficial to assess and manage occupational burnout among clinical faculty members.

Introduction

Burnout syndrome is not just caused by a single stress, but it could be as a result of chronic stress, specific to each profession. Its major aetiologies are impaired experience and behaviour of individuals precipitated by the over-investment of psychological and emotional resources. Therefore, the burnout syndrome is associated with internal and inter-psychological factors [1].

Presently, a variety of health professional groups have been studied with various measures. The available methods such as the Maslach test could just study changes in the individuals' functioning caused by high level of distress and professional burnout among specialists; however, Cloninger's test is based on psychological theory of personality. Based on Cloninger's test-theoretical foundation, 'the personality structure is composed of two basic domains of temperament and character' [2].

Although stress related to work could not lead to exhaustion by itself, however, highly stressful work environment, such as intensive care units induces higher levels of anxiety, anger, behavioural disturbances and depression syndrome for medical staff.

Several studies have shown less job satisfaction and high risk of mental health because of higher level of stress [3].

Stoyanov *et al.* (2013) also confirmed that clinical manifestations of burnout syndrome are consistent with measures for depression and anxiety disorder; they also mentioned that it could indicate to presence of initial stages burnout syndrome, namely flame out [4].

Faculty duties have been determined in different domains (such as education, research and personal development). Moreover, clinical staffs are also responsible for providing health care services in Iran [5]. This workload could predispose them to burnout syndrome. As to the literature, 'The Burnout Syndrome is a type of professional exhaustion, which takes place in three consecutive stages that differ in their manifestations and intensity. Therefore, monitoring of the interaction between the psychological functioning of the individuals with the organizational climate in terms of psychological and social well-being should occur between the first two stages of the process – flame-out (i.e. stress of futile effort) and burnout (i.e. exhaustion and demoralization). This early period in the burning process is propitious to identify means of intervention for the sake of preservation and recovery of the psychological potential of the workers in such vulnerable groups of medical specialists. At an earlier stage, the phenomenology of professional "burning" is not difficult to differentiate from the symptoms of psycho emotional stress, whereas at a later stage (described by the term 'rust out'), there may be less benefit from psychological interventions as the harm is thought to be might also be helpful in future work' [6]. This definition and classification is the base of some personality models and the related developed instruments. As the present study has not addressed personality directly, they have not been applied here.

Medical education around the world is in flux, as new ideas for content and methods of learning are being advocated. Medical faculty members must implement these new approaches, but rates of high stress and burnout in university faculty members have been increasingly recognized. Could the implementation of new curricular approaches be impeded by such stress/burnout? Answering such a question involves developing several distinct capacities: (1) a capacity to understand barriers to implementation of change, as it applies to curricular reform; (2) the measurement of stress and burnout in medical teachers; and (3) the ability to see if measuring both such constructs is actually feasible in a medical school setting. In order to determine the link between burnout and curricular reform, two related research activities have been performed on involving faculties, working in Tehran University of Medical Sciences (TUMS). Firstly, we adapted existing stages of change questionnaire for our faculty; next, we developed translations of a standard burnout measure and distress measures; finally, we then recruited a sample of faculty to answer both questionnaires and performed an analysis to provide a preliminary impression of the link between faculty burnout and curricular change implementation.

Materials and Methods

Participants and procedures

Participants were recruited from faculty members of TUMS who were teaching in clinical domains for at least 1 year. All participants were taken written informed consent.

143 participants out of 710 clinicians, working in 19 clinical departments, (72 females and 71 males with mean age of 46.7 ± 6 , ranging from 32 to 73) were selected through stratified randomized sampling regarding their demographic characteristics such as specialty. Subjects were divided into two major groups of internal and surgical, due to lack of participants in each stratum of specialty.

Measurements

Measuring stages of change

The stages of change (SOC) theory looks at the change and promotion of individual behaviour. Based on the Prochaska point of view, the SOC consists of five stages: pre-contemplation, contemplation, preparation for action, recent change and maintenance [7]. The model postulates that individuals are at different stages of readiness to change and that effective interventions should adjust to the stages and assist movements to higher stages, thus promoting behavioural change. The model has been applied most commonly in health behaviour contexts, such as treatment of addictive behaviour, and health promotion [8–10]. A modified Prochaska model has been used as an evaluation tool to assess the participants' stages of readiness to change in health professionals involved in a research transfer training programme. The original five stages were reduced to three stages-attitude, intention and action-in the 'Modified Prochaska Questionnaire'. In the 'attitude' stage, there is an awareness of the problem but no commitment to take action. In the 'intention' stage, the individual is prepared for behavioural change, while in the 'action' stage; this change has already taken place.

TUMS Stage of Change questionnaire (TUMS-SOC) has been developed based on faculty job requirements, assigned by Ministry of Health and Medical Education in Iran, specifically for determining change in behavioural intention as well as consequent changes in faculty members (Appendix A). Initially, the SOG questionnaire was developed and validated in the field of faculty development under the supervision of an expert panel (one medical educationalist, one epidemiologist and three clinical faculty members from TUMS, specifically for the study of change and burnout. In this 14-item questionnaire, there are three domains: research, educational and personal development tasks. All items were scored from 1 to 4. The sum of scores indicated individuals' stage of change: attitude stage (score below 24), intention stage (score 25–36) and action stage (score above 37). Ten experts in the medical education field confirmed content and face validity of questionnaire. Three qualitative Delphi rounds with more than 90% agreement approved final modifications. Test-retest approach was used to investigate the reliability of the questionnaire among 10 medical faculty members with 1 week interval; they were excluded from main sample. The *k* coefficient

was 0.96. It was adapted based on experience in other studies such as Buckley and Shirazi [10–12].

Measuring stress and burnout

Background stress and burnout are common among medical staff. It has been shown that high levels of stress have detrimental personal and professional consequences as well as negative influences on patient care. Burnout is a professional psychological stress-induced syndrome defined as having three dimensions: emotional exhaustion, depersonalization and low personal accomplishment [12]. Maslach *et al.* described burnout as the point at which important, meaningful and challenging work becomes unpleasant, unfulfilling and meaningless. Indeed, at this point, energy turns into exhaustion, involvement leads to cynicism, and efficacy is replaced by ineffectiveness [13,14]. Burnout is prevalent among clinical staff with certain specialties. The higher the academic rank, the further the risk [14]. Burnout has a detrimental effect on the doctor's quality of life and is associated with an increased risk of suicidal ideation [15].

The Maslach Burnout Inventory (MBI) was created to assess severity of burnout [14]. Further, it has also been contextualized and validated in Iranian context. It includes 22 items that are divided into three subscales: emotional exhaustion (EE), depersonalization (DP) and personal accomplishment (PA). Each item has a seven-point response format rating from 0 (never) to 6 (every day). The higher scores indicate the greater degree of burnout. Burnout is assessed as low, average or high by comparing EE, DP and PA scores to norms established for specific groups [14]. In this study, the norms established for faculty members were used. EE subscale reflects the degree of emotional fatigue experienced by participants and higher scores indicated increased risk of burnout. DP reflects the extent to which the participants have emotionally removed themselves from the work and high scores are associated with higher degrees of burnout. The PA subscale reflects the sense of satisfaction the participant experiences with work. Lower scores are associated with increased risk of burnout. Test–retest reliability was estimated for the instrument ranged from 0.84 to 0.88 [15].

As to the literature, no relationship has been found between stages of change and burnout [16–23].

Measuring general health

Besides the burnout measure, an additional, well-known distress measure, the General Health Questionnaire (GHQ; Goldberg, 1992) has been applied. The Persian version of GHQ uses 12 self-report items about recent symptoms or behaviours. Each item is rated on a four-point scale (less than usual, no more than usual, rather more than usual or much more than usual); GHQ total score was estimated between 12 and 36 based on the selected scoring methods. The Likert scoring style (0-1-2-3) is used to measure four dimensions of general health: physical symptoms, anxiety, insomnia and social malfunction and depression symptoms and has a high sensitivity to determine the vulnerability of participants to mental disorders. Scores lower than 28 indicate high levels of general health and scores higher than 28 suggest mental health problems and low levels of general health. The reliability of the GHQ was evaluated by examining its internal consistency and

Cronbach's alpha, which was calculated as 0.90 [23]. The GHQ scores were demonstrated to have concurrent validity with strong correlation with SCL-90 instrument ($r = 0.90$).

Linking faculty burnout and ability to implement curricular change

Having established key measures of barriers to change and faculty stress, we then conducted a pilot study to evaluate the feasibility of such research and to provide some preliminary findings about the link between curricular reform implementation and burnout, using a descriptive analytical design.

Statistical analysis

Data were analysed by SPSS: 16.0 for Windows using descriptive statistics (e.g. frequencies and percentages) to describe variables as well as Pearson correlation coefficients analysis method to assess associations between study variables.

Results

The 143 clinical faculty members were from 19 departments; surgical (e.g. gynaecology, urology, orthopaedics, ENT, neurosurgery, anaesthesia) and internal medicine (e.g. cardiology, dermatology, psychiatry, paediatrics). The socio-demographic characteristics of participants are listed in Table 1.

The TUMS-SOC scores indicated that 49.7% ($n = 71$) of participants were in the intention stage, 44.1% ($n = 63$) in the action stage and 6.3% ($n = 9$) in the attitude stage. Because of the small number in the attitude stage, and the close relationship between attitude and intention, it was combined with the intention stage participants for further analytical purposes.

For stress and burnout, the MBI scores showed that the majority of the clinical faculty members had low EE scores (52%) and low DP scores (70.6%). In addition, the PA subscale scores of 44.8% of participants were low, while about 36.4% of participants had high PA scores and high job satisfaction. In addition, most of sample (88.9%) was in good general health condition (Table 2).

Preliminary findings of linkage between change stage and burnout

Participants' gender was associated with the stage of change ($P = 0.04$): women were mostly in the intention stage, while men

Table 1 Demographic, work and education characteristics of study population

Clinical faculty members	Number (%)
Gender	
Men	72 (50.3)
Women	71 (49.6)
Age	46.7 ± 6.7 (mean ± SD)
Years of academic services	13.6 ± 4.7 (mean ± SD)
Place of graduate	
Iran	128 (89.5)
Abroad	13 (9.09)
Specialty	
Surgery	102 (71.3)
Internal medicine	41 (28.6)

Table 2 Descriptive statistics of SOC, burnout and GHQ

Variables	n (%)
SOC	
Action stage	63 (44.1)
Intention stage	71 (49.7)
Attitude stage	9 (6.3)
Burnout questionnaire	
EE subscale	
Low	76 (52)
Average	36 (23)
High	41 (25)
DP subscale	
Low	101 (70.6)
Average	34 (23.8)
High	8 (5.6)
PA subscale	
Low	64 (44.8)
Average	27 (18.9)
High	52 (36.4)
GHQ	
≤ 28	120 (83.9)
>28	23 (16.1)

were in the action stage. In contrast, there was no association between stage of change and age ($P = 0.0$) or years of experience as a clinical faculty member ($P = 0.09$). In addition, no statistically significant association was found between participants' age and burnout scores ($P = 0.3$).

Regression analysis showed that burnout was associated with stage of change. The relationship between specialty and burnout and stage of change were also assessed. The majority of surgeons, who were in the action stage (58.3%), had low EE scores (58%). There was significant correlation between stage of change and EE subscale scores among surgeon ($r = 0.8$). In addition, participants with medical specialties who had low EE scores (50.98%) were in the action stage of change (67.3%). The stage of change was also associated with EE subscale ($P = 0.03$). Individuals who had low EE scores were mostly in the action stage of change. 46.3% of surgeons had low PA scores and 89.5% of them were in the intention stage. Additionally, job satisfaction (PA subscale scores) of surgeons was significantly correlated with stage of change ($r = 0.7$, $P = 0.05$). About 44.1% of clinical faculty members with medical specialties had low PA scores and 77.8% of them were in the intention stage. Pearson correlation coefficients showed that job satisfaction was associated with stage of change ($r = 0.5$, $P = 0.05$). Significant association was found between depersonalization (DP) subscale and stage of change ($P = 0.000$). The majority of faculty members with surgical ($n = 29$) and medical specialties ($n = 72$) were indicated to have low DP scores, most of whom were in the action stage of change in both surgical (55.2%) and medical groups (58.3%). DP subscale was significantly associated with stage of change in the surgical group ($r = 0.7$), while no significant association was found in the medical group ($r = 0.2$).

Pearson correlation coefficients indicated that there was no significant correlation between general health scores and stage of change in the surgical ($r = 0.3$) or the medical groups ($r = 0.6$).

Discussion

Our study sought to examine the relationship between the burnout of clinical faculty in a medical school and their receptivity to starting new academic activities as captured by a measure of readiness to change/stages of change model. Additionally, we explored the relationship between burnout and a measure of the general psychological health and in turn, the relationship between psychological distress and readiness to change. We found a significant relationship between clinical faculty member's readiness to change and the subscales of occupational burnout. In other words, participants with low occupational burnout were more likely to be in the action stage, while those with high burnout were in the attitude or intention stage, which could be understood as not being ready to implement change.

In line with our findings, Evers *et al.* reported that high self-efficacy beliefs of teachers may reduce the occupational burnout and make individuals more prepared for implanting a new educational system [24]. Another study, performed by Hays *et al.*, reported on insight into work conditions, which allows for some understanding of the link between working conditions (another way of thinking about stress) and the individual's understanding of how job stress had impact on performance [25]. It is likely that job satisfaction acts as a major motivation for clinical faculty who are in the action stage. Hence the correlation between readiness to change and burnout among faculties is a crucial issue and should be considered as part of a needs assessment, that is, in order to implement a successful curriculum revision at medical universities such as TUMS, it is necessary to be assured of how faculty change (improve) their behaviour for coping with new curriculum and consider job burnout which will influence on their performance.

Our results also demonstrated that there is a correlation between SOC and burnout with the specialty of participants. Previous studies on burnout reported a various range among different specialties [26], with higher rates of burnout among surgeons. In our limited sample, we observed similar findings.

In our study, there was no correlation between depressed mood based on the GHQ and readiness to change in study population, abolishing the initial concern that the main factor hindering readiness to change may be depression rather than job burnout. We could not find any similar studies regarding a relationship between the depressed mood and job burnout. In a Spanish study on the general well-being of medical personnel using the GHQ, poor general health was observed among 23% of included doctors, compared with just 16% in our study [27]. This suggests that depressed mood at TUMS is lower than other countries, while the level of burnout was similar.

Although health care personnel are frequently at risk for the 'burnout' syndrome, modern measures of burnout could recognize burnout just only when it is fully developed [28]. Some scholars have applied different tests for personality and temperament such as TCI (The Temperament and Character Inventory) by Cloninger, a 240-item inventory, which studies seven dimensions of temperament consist of novelty seeking, harm avoidance, reward dependence and persistence. Dimensions of characters include self-directedness, cooperativeness and self-transcendence and found similar results: Bulgarian researchers found relationship among trait anxiety and some temperament dimensions, which might be considered as predictors for fatigue-related disorders [29].

Other researchers found that the burnout syndrome influenced on personal well-being and professional performance. They have recommended identifying individuals with a tendency towards burnout development, in order to undertake preventive measures such as stress management and improvement of the stress coping strategies [30].

One study showed relationship between the temperament and character traits and burnout [31]. Another study showed that temperamental traits have been largely correlated with burnout performance, mostly represented by emotional exhaustion, de-personalization and reduced personal accomplishment [6].

It should be noted that although TCI was developed around 1994, the related papers that studied relationship between personality and burnout using TCI have been published around 2012, that is, it was after conducting the present study. On the other hand, personality of participants has been considered objectively by another test because if the TCI was applied, it would not be possible to get feasible response rate not only because of the length of the test, but also because of heavy workload of faculty members in Iran.

The other issue is that personality and character are not the main and direct concern of present study, they affect on stages of change and participants' health, which could be regarded as a part of personality. The lack of validation of the TCI in Iran also presents another challenge.

Overall, our findings and the existing literature indicate a relationship between stages of change and burnout in clinical faculty. This suggests the usefulness of exploring burnout as a key part of a needs assessment approach in medical curriculum modification process [12,28]. One novel aspect of our study is the simultaneous study of the stages of change and burnout, using specific scales for each construct. No study could be found to evaluate stages of change in clinical faculties; however, some similar studies have been done in other professions. Specifically, two studies involving teachers were conducted by Hays *et al.* (2002), designed to test teachers' attitudes towards new instructional practices and the relation to burnout and self-efficacy beliefs regarding implementation of the practice and coping with stress [26]. The results demonstrated that teachers' self-efficacy beliefs had a relationship with burnout; those with strong self-efficacy beliefs were more prepared to implement new educational practices.

Interestingly, the teacher-derived model could have some applicability to our medical faculty findings. In our study, readiness to change could be considered as readiness to experiment, so it could be concluded that the lower the burnout, the higher self-efficacy and consequently, higher readiness to change.

What are the implications of this preliminary research for medical curriculum reform? Doctors with lower burnout are more likely to be more internally motivated and also have more job satisfaction, which makes it more likely to be ready to change, that is, they are in the action stage. In the action stage, they are more likely to engage medical school initiatives in curriculum reform. An additional observation is that surgeons had more readiness to change in comparison with the internists. Thereby, one implication is that medical school curriculum change could be more successful starting with surgeons than with internists – surely a topic for hot debate between specialties!

Limitations

Since a descriptive study design was used, these findings may not be generalized to the whole target population. Additionally, because of the limitations in faculty members' time to respond the study questionnaires, the sample size was not big enough to include all specialties and subspecialties with adequate numbers to compare evaluated factors among these groups. Further studies with higher number of precipitants are recommended to evaluate the probable differences between various specialties.

Another key limitation is the reliance of self-report measures for both readiness to change and personal characteristics such as distress, which may be under-reported because of privacy concerns even though all the questionnaires were anonymous, and data were kept confidential. Mitigating these concerns was the use of well-validated self-report questionnaires.

Conclusion

We studied the link between burnout in medical school faculty, a measure of readiness to change in academic activities and psychological distress. We found it feasible to measure stages of change as well as stress/burnout in academic doctors, and to be able to perform exploratory analyses of the correlations between measures. The findings of this study indicated that it is highly probable that occupational burnout directly reduces the readiness to change. To have successful academic reform in medical schools, it therefore would be beneficial to assess and manage occupational burnout among clinical faculty members. In addition, there appears to be a link between burnout and doctor specialty. By taking both readiness to change and burnout into account, the launch of a new curriculum could be modified to improve chances of successful implementation.

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Appendix A: The first questionnaire related to the questionnaire is ready for change

Sample questionnaire

SOC questionnaire

This questionnaire includes 14 subjects, please read carefully each items and choose the closer response to your situation

Row	Question	Not necessary	It is an important issue and I think about it	I have planned for it	I have applied it
1	Modern teaching methods (holding training workshop and group discussion) in theoretical debates				
2	Despite the work load, counseling with students				
3	By considering time limit, holding formative assessment at least one assessment in every three theoretical and practical session				
4	Assessing the students' clinical performance at the end of term by Oral/ written exams for assessing students' knowledge				
5	Necessity of reading related articles to teaching subject				
6	To review the students' clinical testing and applying the new assessment methods such as DOPS, OSCE . . .				
7	Preparing lesson plan for each courses <i>If your response is positive, please mention the name of the course below</i>				
8	By considering the work and course load, students are obliged to have a project during the term. <i>Please mention the name of the courses in this regard</i>				
9	Doing research in medical education <i>Please mention the project title</i>				
10	By considering time limit, large number of students, residents and patients in each clinical round communication with patient				
11	As a professor, students participate in journal clubs, required by considering the time limit				
12	Despite work load of clinical faculty members, compiling and translating of books				
13	Despite work load of clinical faculty staff, participate in medical education congress				
14	Despite work load of clinical faculty staff, show up on Fellowship in Medical Education				
