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## Resident Physician Burnout: Is There Hope?

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### Abstract

**Background**—Prevalent among resident physicians, burnout has been associated with absenteeism, low job satisfaction, and medical errors. Little is known about the number and quality of interventions used to combat burnout.

**Methods**—We performed a systematic review of the literature using MEDLINE and PubMed databases. We included English-language articles published between 1966 and 2007 identified using combinations of the following medical subject heading terms: burnout, intervention studies, program evaluation, internship and residency, graduate medical education, medical student, health personnel, physician, resident physician, resident work hours, and work hour limitations. Additional articles were also identified from the reference lists of manuscripts. The quality of research was graded with the Strength of Evidence Taxonomy (SORT) from highest (level A) to lowest (level C).

**Results**—Out of 190 identified articles, 129 were reviewed. Nine studies met inclusion criteria, only two of which were randomized, controlled trials. Interventions included workshops, a resident assistance program, a self-care intervention, support groups, didactic sessions, or stress-management/coping training either alone or in various combinations. None of the studied interventions achieved an A-level SORT rating.

**Conclusions**—Despite the potentially serious personal and professional consequences of burnout, few interventions exist to combat this problem. Prospective, controlled studies are needed to examine the effect of interventions to manage burnout among resident physicians.

Burnout, often defined as emotional exhaustion, depersonalization, and a decreased sense of personal accomplishment due to work-related stress,<sup>1, 2</sup> is found in both residents and practicing physicians.<sup>2–5</sup> Resident physicians appear to be especially prone to burnout due to the number of hours spent at work each week, the large body of clinical knowledge to master, and the challenges of balancing work and home life.<sup>5</sup> Burnout has been associated with absenteeism, high turnover at the workplace, and decreased job satisfaction.<sup>6–8</sup> Residents who met criteria for burnout are more likely to self-report delivery of suboptimal patient care<sup>2</sup> and medical errors.<sup>9</sup>

Despite evidence that the prevalence of burnout is high among resident physicians, and that there are potentially serious consequences of burnout, there appear to be few intervention

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studies aimed at decreasing burnout or improving the well-being of resident physicians. The aim of this review is to describe the current literature on studies that evaluate interventions designed to deal with resident physician burnout.

## Definition

Burnout is characterized by the loss of emotional, mental, and physical energy due to continued job-related stress.<sup>10</sup> As noted, burnout is defined as a combination of three elements: (1) emotional exhaustion: the depletion of emotional energy by continued work-related demands, (2) depersonalization: a sense of emotional distance from one's patients or job, and (3) low personal accomplishment, which is a decreased sense of self worth or efficacy related to work.<sup>1</sup>

The Maslach Burnout Inventory (MBI), the most widely studied tool for burnout measurement, is a 22-item scale that has been validated in several samples, including family physicians.<sup>8</sup> 11 MBI subscales include emotional exhaustion, depersonalization, and personal accomplishment. By convention, persons scoring high (upper third) in emotional exhaustion or depersonalization are classified as having burnout.<sup>5</sup>

## Epidemiology

Burnout is not limited to residents. It may be seen in medical students and physicians in practice. The prevalence of burnout in a sample of US medical students ranged between 43%–45%.<sup>12, 13</sup> Between 22%–60% of practicing specialists and general practitioners are reported to have experienced burnout.<sup>2–4,14</sup>

The prevalence of burnout appears to be highest, however, among resident physicians.<sup>2,15–18</sup> Prevalence estimates range between 40%–76% among internal medicine and pediatric residents<sup>2,19,20</sup> and 47%–70% among surgery residents.<sup>21</sup> Other studies reported high mean scores in emotional exhaustion and depersonalization on the Maslach Burnout Inventory<sup>22</sup> and a high prevalence (56%–80%) of burnout among family physicians.<sup>23</sup>

## Etiology

There is little evidence in the literature regarding the etiology of physician burnout. Potential causes of burnout include factors acting at the physician level and practice level, and they also include difficulties with work-life balance. Physician-level factors such as personality and regret of specialty choice are correlated with burnout among family medicine residents.<sup>17</sup> Practice-level factors, such as clinical demands, business and insurance concerns, and keeping up with rapidly advancing technology may cause burnout.<sup>2</sup> Difficulty balancing home and work life may also contribute to physician burnout.<sup>3,14,24,25</sup>

## Correlates and Consequences

Burnout has been associated with absenteeism, high turnover at the workplace, and decreased job satisfaction.<sup>6–8</sup> In one study, of those meeting criteria for burnout, 50% also met criteria for depression and 9% met criteria for at-risk alcohol use.<sup>2</sup> Residents who met criteria for burnout were more likely to self-report suboptimal patient care at least monthly.<sup>2</sup> A recent study found that burned-out residents were more likely to self-report medical errors than residents without burnout.<sup>9</sup> In contrast, another recent study showed no association between burnout and self-reported medical error in pediatric residents.<sup>20</sup>

## Other Issues

Recently, there has been an upsurge in reports of the influence the recently implemented 80-hour resident work week on levels of resident physician burnout. The Accreditation Council for Graduate Medical Education (ACGME) work-hour limitations (WHL) were implemented in July 2003 in an effort to decrease resident physician fatigue and improve patient safety.<sup>26</sup> The literature suggests that resident burnout decreased, and resident satisfaction and well-being increased after the implementation of the WHL.<sup>19,27–29</sup> For instance, the prevalence of burnout decreased from 74% to 58% among internal medicine residents with implementation of the WHL.<sup>28</sup>

While the WHL could be viewed as a burnout intervention, the WHL were not specifically designed to address this syndrome; instead, the WHL were designed to address patient safety. In addition, a systematic review examining the effects of the work hour limitations on a variety of factors, including burnout, was recently published in JAMA.<sup>30</sup> Noting that the prevalence of burnout after implementing WHL has remained high, WHL cannot alone be considered an effective measure for dealing with burnout. Our paper will review studies on interventions related to burnout other than those that studied WHL.

## Methods

Articles were identified by searching the MEDLINE and PubMed databases, as well as articles identified from the reference lists of reviewed articles. We included English language articles published between the years 1966 and 2007. After a preliminary review of the intervention data, we found that there was a paucity of intervention research related to resident physicians. Due to the high prevalence of burnout among medical students and similar stressors and demands facing both medical students and residents, we decided to include medical student studies in our review to broaden our scope.

We used combinations of the following medical subject headings (MeSH) terms in our search: burnout, intervention studies, program evaluation, internship and residency, graduate medical education, medical student, health personnel, physician, resident physician, resident work hours, and work hour limitations. Articles were critically reviewed and abstracted independently by two of the authors. The literature search strategy is summarized in Figure 1.

## Exclusion Criteria

Articles were excluded if there was no abstract available for preliminary review. We also excluded articles focusing exclusively on nurses, midwives, and other nonphysician health care providers were excluded. Our rationale for this exclusion was that nurses may have different sets of stressors and go through dissimilar training compared to our population of interest, resident physicians. A preliminary review of the nursing literature revealed articles related to nursing-specific issues, like clinical supervision, interventions to reduce back pain, and altering shift patterns for nurses. Additional exclusion criteria included study design (cross-sectional, longitudinal cohort), comment/letter, articles related to WHL, systematic reviews, editorials, and patient education handouts.

## Inclusion Criteria

Articles were included if they focused on interventions for resident physicians (or medical students) related to burnout. Specifically, inclusion criteria were as follows: randomized controlled trials, non-randomized controlled trials, pre-post design, and longitudinal cohort with intervention. Articles referencing “junior doctors” from the United Kingdom were included since this term is comparable to “resident physicians” in the United States.

After abstracting the identified articles, the quality of each study was then examined and graded. We graded studies according to the Strength of Evidence Taxonomy (SORT), which is summarized in Table 1.

## Results

A total of 190 relevant articles were identified from all sources. Three articles were excluded because the abstracts were not available. Fifty-eight articles were excluded due to the sample exclusion criteria (nurses and midwives).

We then reviewed the remaining articles (n=129). Fifty of these articles were excluded due to study design criteria; of those, 40 were cross-sectional, and 10 were longitudinal cohort studies. Other excluded articles were comments/letters (n=18), studies relating to WHL (n=19), systematic reviews (n=9), editorials (n=23), and patient education handouts (n=1).

Nine intervention studies were identified related to resident (n=6) or medical student (n=3) burnout. Because of the varied methodology used in each intervention study, and diversity of outcome measures used, results were not pooled for analysis and, instead, these intervention studies will be described qualitatively.

## Interventions

The nine intervention studies, only two of which were randomized and controlled, are listed in Table 2 with their SORT ratings. In summary, interventions included workshops, a resident assistance program, a self-care intervention, support groups, didactic sessions, or stress-management/coping training either alone or in various combinations.<sup>18,31–38</sup> None qualified for a SORT-A rating.

## Resident Interventions

One study examined a team training workshop for resident physicians; nurses also participated in the workshop.<sup>31</sup> In this study, nine weekly workshops designed to improve communication and role conflict were led by a psychotherapist and psychiatry resident. The authors found that participants, the total number of which was not specified, scored higher on Personal Orientation Inventory (POI) subscales for self-acceptance, synergy, acceptance of aggression, and inner directedness.

In another study, Dabrow et al studied 193 residents and resident family members that participated in the South Florida Resident Assistance Program (RAP).<sup>36</sup> This longitudinal cohort study looked at incidence of mood disorders, use of RAP over time, and resident awareness of RAP but did not examine outcomes before and after the implementation of the RAP.

Feld et al used a pre-post design in their study of palliative care house staff in the UK (n=25).<sup>38</sup> In this study, a junior doctor support group improved perceived helpfulness and value of the support group. Matthews et al also used a pre-post design in their longitudinal cohort study on 57 internal medicine residents. The authors found that a program in professional development, consisting of 11 sessions of open discussion and problem solving on a flexible, group-determined set of agenda items, improved qualitative measures such as self-awareness, community, and willingness to explore feelings. The program was rated in the middle range as a source of support among other supports available to residents.

In yet another study, a single, day-long stress management workshop improved scores in emotional exhaustion among medicine and pediatric residents (n=63).<sup>18</sup> Finally, a study among

24 family medicine residents showed improvement in emotional exhaustion scores with use of the respiratory-one method (ROM), breathing exercise similar to meditation.<sup>35</sup>

### Medical Student Interventions

Two studies in medical students found no significant intervention effects on depression, alcohol use, or stress level.<sup>32,33</sup> Ball et al used non-randomized voluntary assignment to a self-care intervention with a lecture, written information, and a group discussion or a control group (intervention=29, control=25).<sup>32</sup> No difference was found in alcohol consumption or depression between the groups, but some improvement was found in sleep hygiene in the intervention condition.

Mitchell et al randomized 38 medical students who volunteered for the study (38% response rate out of 99 asked to participate) to a support group (n=12), lecture group (n=13), or control group (n=13).<sup>33</sup> The authors found no measurable effect on stress or measures of depression or anxiety.

The final medical student intervention used a nonrandomized controlled design. The intervention, a 10-session mindfulness-based meditation course, improved overall total mood disturbance in medical students in the intervention group (n=140) compared to controls (n=162).<sup>34</sup>

### Quality of Intervention Studies

Application of the SORT system revealed no studies with quality sufficient to assign level “A” recommendations. Eight studies had inconsistent or limited quality evidence according to SORT criteria (level B), and one study met level C taxonomy (case series).

### Discussion

We found a paucity of intervention research in the area of resident physician and medical student burnout. Out of 190 titles identified, only nine met inclusion criteria. Despite the possible ramifications of burnout, little research has been dedicated specifically to combating this syndrome.

Further, of the studies we reviewed, only two were randomized controlled trials. Many studies recruited subjects on a volunteer basis<sup>18,32,34</sup> and had small numbers of participants, and at least one of the studies, Dabrow et al’s description of the resident assistance program, may be viewed by some as a program evaluation, not an intervention.<sup>36</sup> The interventions did not appear to be manualized, and most articles lacked detailed descriptions of the interventions studied. Few of the studies used validated outcome measures. No level “A” recommendations can be made on the basis of results from the identified intervention studies.

### Implications

West et al, in their paper on the relationship between burnout and medical error, call for “efforts to prevent, identify, and treat burnout to promote empathy and well-being for the welfare of residents and patients.”<sup>9</sup> The quasi-experimental or non-randomized design of most of the existing intervention studies prompts a call for more rigorous research on interventions to combat burnout among resident physicians.

The current studies use a variety of intervention methods, and positive or negative results must be interpreted with caution due to the small sample sizes and non-randomized design of the majority of studies. The current interventions may be hard to replicate due to limited transparency of the interventions themselves. For instance, the support group and workshops

in some studies used a flexible format, allowing for topics to be determined by the group participants.<sup>31,38</sup>

The fluid nature of support groups and workshops may be a methodological concern for future study. Although the changing nature of the topics and group dynamic may change, a standardized approach to such interventions might be possible. For instance, there is some data to suggest that Balint groups, which are established facilitated groups designed to examine the doctor-patient relationship, may help to prevent burnout.<sup>39, 40</sup>

Interestingly, two interventions that used meditation-type practice improved burnout and total mood disturbance in residents and medical students, respectively.<sup>34,35</sup> This might suggest that meditation may improve burnout among resident physicians with greater success than other modalities. The ROM, which has the subject focus on the word “one” with each exhalation, seems to be the simplest intervention and may be easily used among resident physicians. However, the ROM study was non-randomized and had a small number of participants; therefore the results should be interpreted with caution. Future studies might use these methods with larger sample sizes, across specialties, and using more rigorous control groups.

### Limitations

While the results of our literature review shed light on the limited amount of intervention research for burnout, there are limitations to our methods. There may have been selection bias in the choice of our search terms. For instance, we could have broadened our search terms to include well-being, distress, or mood disorders and may have captured more intervention studies. We tried to mitigate this by searching reference lists of relevant articles.

Our decision to exclude other health professions may be another form of selection bias, but we felt that including these studies might limit the generalizability of our findings. Further, medical student interventions may not be directly applicable to resident physicians, limiting the generalizability of the results. In addition, the exclusion of WHL studies may have limited our results.

Despite having the articles reviewed independently by two of the authors, there may have been reviewer bias in identifying and abstracting the articles. Finally, we may have missed intervention studies that were not published due to negative results (publication bias).

### Conclusions

Burnout is highly prevalent among health professionals, especially among resident physicians and medical students.<sup>2,12,13,19–21</sup> Burnout has been associated with absenteeism, mood disorders, and medical error. Despite the potentially serious consequences of burnout, there are few interventions designed to combat this problem. Future study is needed, using standardized methods, larger sample sizes, and validated outcome measures, to identify successful strategies to combat burnout and thus improve the well-being of both resident physicians and their patients.

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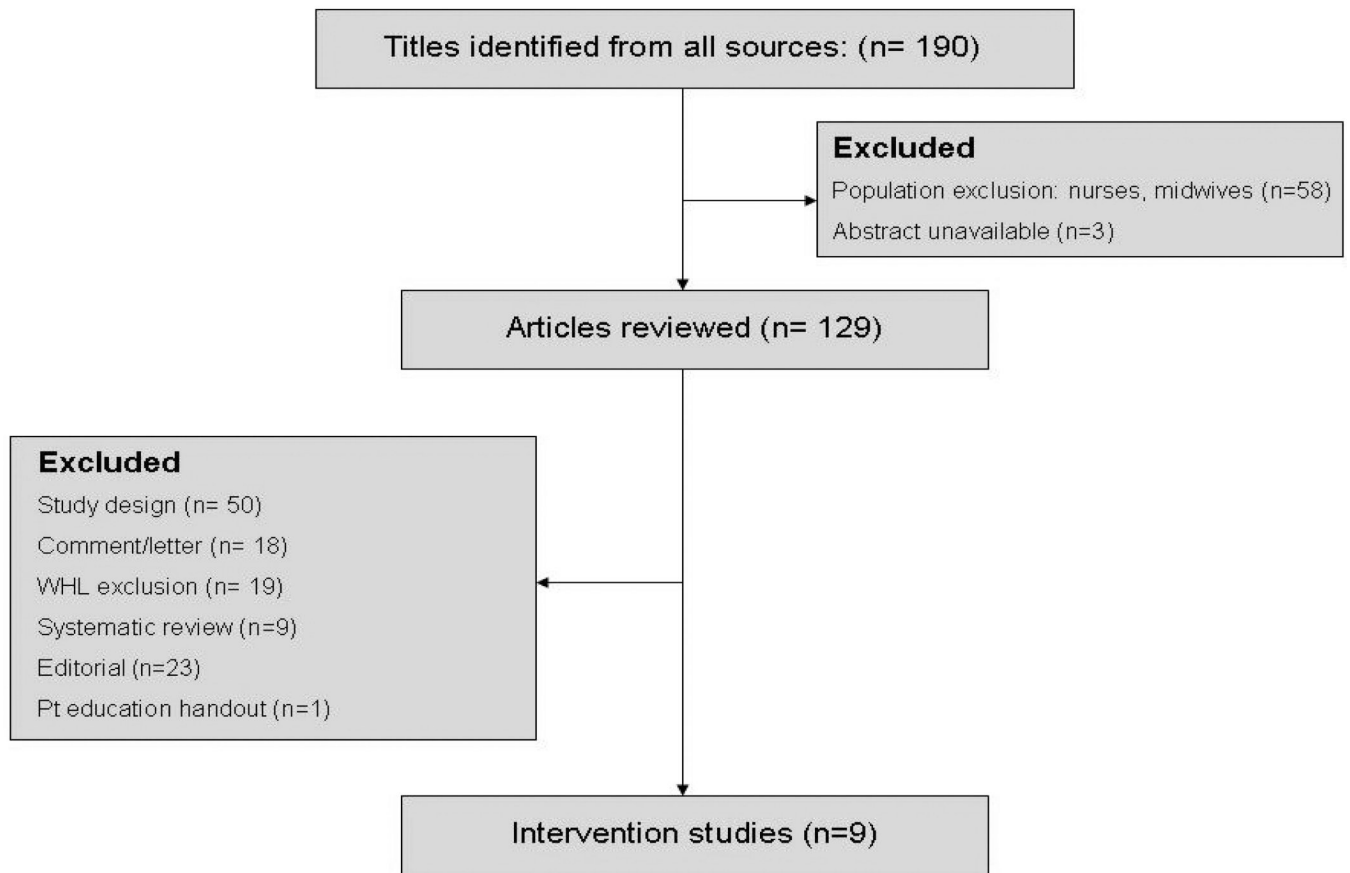
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Study Fow Diagram



**Figure 1.**  
Study Fow Diagram

**Table 1**

Strength of Recommendation Taxonomy (SORT)<sup>41</sup>

<b>Strength of recommendation</b>	<b>Definition</b>
A	Recommendation based on consistent and good-quality patient-oriented evidence
B	Recommendation based on inconsistent or limited-quality patient-oriented evidence
C	Recommendation based on consensus, usual practice, opinion, disease-oriented evidence, or case series
<b>Study quality</b>	
Level 1—good quality patient-oriented evidence	Systematic review/meta-analysis of RCTs with consistent findings High-quality individual RCT All or none study
Level 2—limited quality patient-oriented evidence	Systematic review/meta-analysis of lower-quality clinical trials or of studies with inconsistent findings Lower-quality clinical trial Cohort study Case-control study
Level 3—other evidence	Consensus guidelines, extrapolations from bench research, usual practice, opinion, disease-oriented evidence, or case-series
<b>Consistency across studies</b>	
Consistent	Most studies found similar or at least coherent conclusions or If high-quality and up to date systematic review or meta-analyses exist, they support the recommendation
Inconsistent	Considerable variation among study findings and lack of coherence or If high-quality and up to date systematic review or meta-analyses exist, they do not find consistent evidence in favor of the recommendation

RCT—randomized controlled trials

**Table 2**  
Demographic and Methodological Characteristics of Intervention Studies for Burnout in Resident Physicians and Medical Students

	n	Period of Study	Sample	Study Design	Intervention	Measures	Findings	SORT
Bair et al. <sup>31</sup> 1986.	?	?	Residents and nurses at Evanston Hospital, Evanston, Ill	Longitudinal cohort	Nine weekly TEAMS workshops led by psychotherapist and psychiatric resident	POI Written evaluations	Improved measures on POI; improvement in qualitative measures	B-3
Dabrow et al. <sup>36</sup> 2006.	193	1997–2004	Cases (residents and family members) seen in University of South Florida Resident Assistance Program (RAP)	Longitudinal cohort	RAP	Program evaluation of RAP Resident questionnaire	Increased use of RAP over time (177% increase over 3 years), stable resident awareness of RAP (92%–96%)	C-3
Feld et al. <sup>38</sup> 2006.	25	1997–2002	Junior doctors working in palliative medicine in the UK	Pre-post	Doctor's support group—3 weeks	Semi-structured questionnaire	Significant increase in perception of helpfulness/value of support group; qualitative themes explored	B-3
Matthews et al. <sup>37</sup> 1988.	57	1982–1987	Internal medicine residents at University of Connecticut	Longitudinal cohort	Program in personal and professional development for interns (3 full day and 5 1/2-day sessions)	Qualitative questions Magnitude estimation Rating of program effectiveness Importance of program	Qualitative improvements in self-awareness, community, willingness to explore feelings, and greater tolerance for frustration. Program rated in middle range as source of supports available to residents.	B-3
McCue et al. <sup>18</sup> 1991.	63	1991	Internal medicine, pediatric, and med/peds residents in Boston	Non-randomized, controlled trial	Day-long workshop	MBI LES ESSI	Emotional exhaustion decreased in intervention group	B-2
Ospina-Kammerer et al. <sup>35</sup> 2003.	24	?	Family medicine residents from the Southeast	Non-randomized, controlled trial	Respiratory One Method (ROM) breathing exercise	MBI	Emotional exhaustion decreased in ROM group	B-2
Ball et al. <sup>32</sup> 2002.	54	?	Medical students from Indiana School of Medicine	Randomized controlled trial	Self-care intervention	AUDI Health Habits Survey BDI-II MEQL Epworth Sleepiness Scale	No difference in ETOH use, depression, or emotional adjustment. Some improvement in sleep hygiene in intervention group	B-2

	n	Period of Study	Sample	Study Design	Intervention	Measures	Findings	SORT
Mitchell et al. <sup>33</sup> 1983.	38	1979–1980	Medical students from Creighton Medical School	Randomized controlled trial	Stress management intervention (support group, lecture group, or control)	MMPI BDI STAI	No group differences found in emotional distress	B-2
Rosenzweig et al. <sup>34</sup> 2003.	302	2001	Medical students from Jefferson Medical College, Philadelphia	Non-randomized, controlled trial	Mindfulness-based stress reduction program (MBSR)	POMS	Total mood disturbance decreased in MBSR group	B-2

POI—Personal Orientation Inventory, MBI—Maslach Burnout Inventory, LES—Life Experiences Survey, ESSI—Stress Systems Instrument, AUDIT—Alcohol Use Disorders Identification Test, BDI—Beck Depression Inventory, MEQL—Medical Education Quality of Life Questionnaire, MMPI—Minnesota Personality Inventory, STAI—State-Trait Anxiety Scale, POMS—Profile of Mood States