

# Burnout among plastic surgery residents

## National survey in Saudi Arabia

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### ABSTRACT

**الأهداف:** وضع تفسير أكثر شمولية وفهم انتشار العوامل المرتبطة بارهاق للمقيمين ببرنامج الجراحة التجميلية السعودي.

**الطريقة:** أجريت هذه دراسة مقطعية. وقد تم جمع البيانات باستخدام مسح، تم توزيعه خلال الفترة أبريل 2015، من بين جميع 57 المقيمين في برنامج الجراحة التجميلية في برامج التدريب في جميع مناطق المملكة العربية السعودية، وقد استجاب 38 (معدل الاستجابة 60%). المتغير التابع هو الإحراق المهني، والذي تم قياسه من خلال 3 مقاييس فرعية للتحقق من صحة مقياس مصلاتش (MBI). اتخذت كلا من درجات عالية على الانهك العاطفي (EE) أو إضفاء الطابع الشخصي (DP) أو درجات منخفضة على الإنجاز الشخصي (PA) لتكون مؤشراً على الإرهاق المهني. واشتملت المتغيرات لتقييم التنبؤات المحتملة من الإرهاق، مثل الخصائص الاجتماعية والمهنية.

**النتائج:** كان معدل التحقق من حالة الإرهاق عالية 18%. وسجل ما يقرب من ثلاثة أرباع (71%) من السكان درجة عالية من الانهك العاطفي، ونصف (50%) وسجلت ارتفاع في إضفاء الطابع الشخصي. وسجل الثلث (34%) انخفاضاً في الإنجاز الشخصي. ومع ذلك، كان 5% فقط غير راضين عن التخصص الجراحة التجميلية كمهنة، و 69% سيختارون نفس التخصص مرة أخرى. لم يتم العثور على أن عبء العمل قد يلعب دوراً هاماً في الإرهاق المهني (70 ساعة في الأسبوع).

**الخاتمة:** ما يقرب من نصف متدربين الجراحة التجميلية في المملكة العربية السعودية لديهم دلائل على الإرهاق المهنية.

**Objectives:** To develop a more comprehensive explanation and understanding of the prevalence of and factors associated with burnout for residents of the Saudi Plastic Surgery Residency Program.

**Methods:** This is a cross sectional study. Data was gathered using a survey, which was distributed during April 2015, among all 57 plastic surgery residents enrolled in training programs across all regions of Saudi

Arabia, 38 of whom responded (60% response rate). The dependent variable was professional burnout, which was measured by 3 subscales of the validated Maslach Burnout Inventory (MBI). High scores on emotional exhaustion (EE) or depersonalization (DP) or low scores on personal accomplishment (PA) were taken to be indicative of professional burnout. Variables evaluating possible predictors of burnout, such as sociodemographic and professional characteristics, were also included.

**Results:** The validated rate of high burnout status was 18%. Nearly three quarters (71%) of residents scored high in emotional exhaustion, and half (50%) scored high in depersonalization. A third (34%) scored low in personal accomplishment. However, only 5% were dissatisfied with the plastic surgery specialty as a career, and 69% would choose the same specialty again. Workload was not found to play a significant role in the development of burnout (mean 70 hours per week).

**Conclusion:** Approximately half of plastic surgery trainees in the Kingdom of Saudi Arabia have signs of professional burnout.

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Occupational burnout can be defined as a combination of emotional exhaustion (EE), depersonalization (DP), and an anticipated lack of personal achievement (PA), which together lead to decreased capability and potency at work. The subject has received significant consideration and debate over the last several years,<sup>1</sup> especially for its prevalence in the medical field, given the high emotional demands of clinical work environments. Physicians in particular have found burnout to be a major hazard of the profession.<sup>2</sup> Maslach's traditional description of burnout syndrome included the 3 aforementioned dimensions: EE, DP, and PA.<sup>3</sup> However, subsequent studies of physicians have tended to use only EE and DP, following the rationale that PA is less efficacious for the purposes of characterizing burnout syndrome.<sup>4</sup> Burnout is commonly agreed to represent a state of long-standing stress, with symptoms of moodiness, fatigue, sleep disturbance, and loss of interest and personal development in work. This condition may interfere with the physician's ability to provide empathic care and sound clinical judgment. It can also lead to a variety of detrimental propensities, including depression, poor performance, and medical errors that have negative consequences for patient care.<sup>5</sup> Moreover, burnout is a major source of career dissatisfaction, and can lead to withdrawal from a profession or early retirement.<sup>6</sup> Residency training is intense, demanding, and stressful. Trainees can be overwhelmed with the long working hours and the constant evaluation of their clinical, technical, and interpersonal performance; thus, they are highly susceptible to burnout.<sup>7</sup> Plastic surgery residents are no exception to this trend. This study was designed and conducted in order to develop a more comprehensive explanation and understanding of the prevalence of and factors associated with burnout for residents of the Saudi Plastic Surgery Residency Program.

**Methods.** All residents undergoing training in plastic surgery in all regions of the Kingdom of Saudi Arabia were approached about participating in the study, which was conducted during the month of April 2015. The questionnaires were distributed among residents during their regular weekly academic activities. Those who

were not residency trainees, such as demonstrators and faculty members, were excluded from the study. Ethical approval for carrying out this research was obtained from King Saud University Research Center.

**Survey instruments.** All participants completed the English-language Maslach Burnout Inventory (MBI) to measure their levels of burnout. The MBI is validated instrument that has long been recognized as the leading measure of burnout.<sup>1-4</sup> It addresses 3 dimensions of burnout, namely, EE, DP, and PA, and consists of 22 total items within those 3 dimensions (9, 5, and 8 items are allocated to each domain, respectively). The MBI takes approximately 15 minutes to complete.<sup>3</sup>

Responses were measured on a 7-point Likert scale ranging from 0 to 6, with scores summed and categorized into published instrument standards of "low," "moderate," and "high" scores in each subscale category.<sup>3</sup> It is important to note that low scores on the "low personal accomplishment" subscale predict a greater likelihood of negative PA assessment by the participant.<sup>8</sup> High scores on EE (27 or over) or DP (13 or over) or low scores on PA (less than 31) indicate symptoms of burnout. Among the dimensions, the scores for EE are considered most important in evaluating burnout.<sup>1</sup>

The survey also included variables that were possible predictors for burnout. These included: 1) demographic variables (age, gender, current position, current rotation, marital status, and number of children); 2) general health variables (weight, height, tobacco consumption, number of days of exercise/week, and hours of sleep/day); and 3) work-related variables (number of on-call days/month, number of clinics/week, number of operations/week, impact of specialty on family life, job salary satisfaction, and satisfaction with specialty choice).

**Statistical analysis.** Statistical analysis was performed using SPSS Version 16.0 (SPSS Inc., Chicago, USA). Continuous data were summarized with means and ranges. Categorical data were reported as percentages and frequencies. Spearman correlation coefficients were calculated to evaluate the associations between variables. The significance level was set at  $p < 0.05$ .

**Results.** A total of 38 residents returned the survey, with a response rate of 60%. The mean age of the residents was  $28 \pm 1.9$  years (range 25-32). Most residents were men (74%, 28/38) and of high average weight (BMI = 25; range 19-36); 45% (17/38) were married. Those with children typically had one child. The mean number of on-calls per month was 7 days (range 3-10), mean number of work hours per week

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(based on start and end hours of working days) was 70 (range 65-75), mean number of clinics per week was 3 (range 0-7), and the mean number of operations per week was 3 (range 1-5). The majority of residents perceived their health as good (55% [21/38]) or fair (24% [9/38]). Residents slept an average of 6 hours per day (range 5-8). Regular exercise, set at a rate of twice per week, was reported by only 31% (12/38) of residents, while 45% (17/38) did not participate in any regular exercise. These responses were generally evenly spread across residents in their second through sixth years (7, 7, 9, 6, and 9, respectively, ranging from 16-24%). Table 1 briefly indicates the demographic characteristics of the participants.

Table 2 describes the subcategories of the burnout scale. Most of the residents (71%) had high EE and half (50%) had high DP. About a third (34%) had low scores for PA. The common criteria of high EE and high DP for burnout indicated that 47% (18/38) of residents reported burnout. The number of residents with high-burnout status, characterized by the classic description of high EE, high DP, and low PA, was 18% (7/38).

Table 3 shows the Spearman correlations of the EE subscale. Amount of exercise (days per week), good general health status, satisfaction with individual

**Table 1** - Demographic characteristic of 38 participants undergoing training in plastic surgery.

| Characteristic                      | Mean | Range |
|-------------------------------------|------|-------|
| Age (years)                         | 28   | 25-32 |
| Body mass index (kg)                | 25   | 19-36 |
| Call (days/month)                   | 7    | 3-10  |
| Sleep (hours/night)                 | 6    | 5-8   |
| Number of children                  | 1    | 0-2   |
| Number of clinics/week              | 3    | 0-7   |
| Number of operated days/week        | 3    | 1-5   |
| <b>Gender n (%)</b>                 |      |       |
| Male                                | 28   | (74)  |
| Female                              | 10   | (26)  |
| Married                             | 17   | (45)  |
| <b>Physician's health n (%)</b>     |      |       |
| Excellent                           | 5    | (13)  |
| Good                                | 21   | (55)  |
| Fair                                | 9    | (24)  |
| Poor                                | 3    | (8)   |
| <b>Number of day exercises/week</b> |      |       |
| Do not exercise                     | 17   | (45)  |
| Once a week                         | 9    | (24)  |
| Twice a week and more               | 12   | (31)  |

**Table 2** - Burnout subscales between classic description of high emotional exhaustion, high depersonalization, and low personal accomplishment.

| Burnout subscale        | Residents in each subscales; n (%) |          |         |
|-------------------------|------------------------------------|----------|---------|
|                         | Low                                | Moderate | High    |
| Emotional exhaustion    | 6 (16)                             | 5 (13)   | 27 (71) |
| Depersonalization       | 6 (16)                             | 13 (34)  | 19 (50) |
| Personal accomplishment | 13 (34)                            | 14 (37)  | 11 (29) |

**Table 3** - Spearman correlations with the emotional exhaustion subscale.

| Covariate                                   | Spearman r | P-value |
|---|------------|---------|
| Age   | 0.15       | 0.93    |
| Body mass index                             | 0.13       | 0.45    |
| Number of exercise/week                     | -0.65      | <0.001  |
| General Health                              | 0.38       | 0.02    |
| Number of on call/month                     | 0.08       | 0.64    |
| Number of sleep hours/day                   | 0.06       | 0.71    |
| Satisfaction individual work-life balance   | -0.39      | 0.018   |
| Satisfaction with job salary                | 0.033      | 0.84    |
| Satisfaction with plastic surgery specialty | -0.53      | <0.001  |
| Spousal support                             | 0.40       | 0.09    |

work-life balance, and satisfaction with the plastic surgery specialty as a career were inversely correlated with EE level. Despite general prevalence of burnout, only 5% (2/38) of respondents were dissatisfied with plastic surgery as a career; 69% would choose the plastic surgery specialty again.

**Discussion.** Burnout not only has a negative effect on medical trainees' learning experiences, but also affects their ability to provide safe patient care, and several reports have suggested that the excessive fatigue and irritability associated with burnout are major factors in the incidence of medical error and adverse events. Saudi Arabia's post-graduate medical training programs are witnessing a critical transformation as Western-educated Saudi graduates return to participate in their development. It is important to understand and evaluate the current state of burnout syndrome among Saudi trainees. A recent report on Saudi otolaryngology trainees showed an alarming prevalence of burnout, with 45% of Saudi medical trainees having both high EE and high DP scores.<sup>9</sup> In this study, which concentrates on Saudi plastic surgery trainees, the rate of burnout was similarly high, with 47% expressing high EE and high PD scores. It is well recognized that burnout is highest during residency training and subsequently decreases

as the graduate attains more senior positions,<sup>10,11</sup> this is likely a result of the high workload and continuous learning demands on the trainees, which ease somewhat as they become experienced practitioners.

Multiple factors are implicated in the development of burnout syndrome. These include workload, work satisfaction, and individual and demographic factors. Plastic surgery has relatively few trainees given outpatient and inpatient demands for the service. The specialization also requires long years of commitment to intense surgical training. Neither the clinical load ( $p=0.442$ ) nor the accumulated years of training ( $p=0.853$ ) showed significant correlations with burnout scores in our study. Traditionally, the workload (hours worked per week and on-call duties per month) is considered an important factor in burnout development.<sup>12</sup> However, the findings that support this belief are inconsistent. For example, a national UK study found that neither hours worked per week nor years spent in the specialty were predictors of burnout.<sup>13</sup> Interestingly, the qualitative analysis in the same study showed that being "exhausted" was a recurrent theme among participants that reported burnout.

It would be spurious to conclude; however, that workload or years of work have no bearing on the development of burnout. This would contradict the existing regulations on work hours and the recently introduced limits on the maximum number of hours worked per week in training programs and medical institutions. It is important to note that surveys of small numbers of institutions represent highly aggregated data; respondents from a specific department or program are likely to have similar workloads, except for minor differences related to rotation schedules or training levels. Likewise, in this study, there was little variability in the workload (70 hours per week, range 65-75) among trainees. Furthermore, akin to Western training programs, the Saudi programs in consideration are structured in such a way that on-call and inpatient duties decrease as the trainee progresses from a junior to a more senior level. Thus, the burden from the accumulated years of training is balanced with the progressive decrease in workload, and this may somewhat compromise the ability of the analysis to accurately evaluate the true effect of workload on the trainees.

Lifestyle factors, such as overall health perception, exercise, and personal stressors, are also important factors to consider in the development of burnout. It is difficult, in a survey study such as this, to evaluate causality in these sorts of relationships whether the burnout is leading to unhealthy lifestyles or the

unhealthy lifestyle is exacerbating burnout. Overall health perception was not found to be an important factor; it is unlikely that the young surgical trainees have critical or chronic conditions significantly affecting their health perception. Nonetheless, regular exercise, as an indicator of healthy lifestyle, showed a significant inverse correlation with burnout. This is consistent with previous studies showing that regular exercise is one of the most important factors in protecting from burnout.<sup>14,15</sup> Doing so, however, is complicated in our study area, because exercise facilities are not available within current Saudi medical institutions, and the Saudi weather and environment make it challenging to participate in outdoor exercise. Trainees are therefore likely to require independent membership at a fitness facility to maintain regular exercise. Given the importance of exercise in burnout prevention and health promotion, it is strongly recommended that easily accessible fitness facilities be created within Saudi medical institutions.

In comparison with students in Western (American, Canadian, and European) programs, Saudi trainees seem to be exhibiting higher prevalence of burnout, as demonstrated in this evaluation of plastic surgery trainees as well as in a recent evaluation of otolaryngology trainees.<sup>9</sup> A recent study of plastic surgery residents in France showed that their burnout level was approximately 28.8%.<sup>16</sup> Qureshi et al<sup>12</sup> reported that 30% of plastic surgeons in the U.S. suffered from burnout.

Several factors might be causing this trend among Saudi trainees. Western residency training programs have become aware of resident burnout, and have introduced many regulations to control the maximum work hours per week and on-call duties per month. These programs also undergo regular evaluation to improve the learning experience and promote the wellness of their residents, which may include mentorship and group activities.

Saudi Arabia's post-graduate training programs are assuming the responsibility of being leaders among Middle Eastern medical institutions for the training of future physicians. It is important that regulations be introduced to control the maximum work hours per week and put a cap on on-call duties. In addition to these limits, seminars need to be included in the training curriculum to help residents and consultants recognize burnout and develop strategies to assist residents who are experiencing it at high degrees. Regular exercise seems to be the most consistent protector against burnout, with this in mind, medical institutions should promote regular exercise and make fitness facilities accessible to trainees and staff.



This study has a number of limitations, and the results should be interpreted with caution. In order to maintain homogeneity between respondents and to allow for specific evaluation of burnout predictors the sample was focused on plastic surgery trainees. However, this means that the results cannot be generalized to all specialties, since other programs may have different workloads and types of stressors. Moreover, survey designs have the inherent limitation of responses being subject to biases of recall and social desirability. To minimize the effect of these biases, we implemented the survey through a process that protected the identity of the trainees, so it is unlikely that these biases had substantial impact on our findings.

Physicians must be taught to recognize and respond to the precursors of burnout, and there must be a collective effort to draw attention to and address the issue. This could be achieved through workshops, retreats, and education programs for students. Mentoring or advising residents may further assist with helping trainees develop coping skills and recognize when they begin to express signs of burnout. Program directors should consider providing local resources for counseling where confidentiality is ensured. Residency programs have attempted to address the issue of resident wellness, but adequate data is not yet available.<sup>17</sup>

In conclusion, burnout has a negative impact on healthcare providers, particularly trainees. In this study, half of plastic surgery trainees had burnout, a value higher than that found in most international studies on the subject. The Saudi Health Commission for Health Specialties and training institute centers should address this problem and identify trainees who experience burnout in order to set clear strategies to decrease its impact on residents and plastic surgery training programs in the future.

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