Burnout and perceived quality of care among German clinicians in surgery

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Abstract

Objective. Burnout is highly prevalent among clinicians but there is not much known about the association between burnout and quality of care. In this paper, burnout, perceived quality of care and medical errors among German clinicians in surgery are explored.

Design. Data were collected during 2008 by a cross-sectional, standardized mail survey.

Participants and Setting. A total of 1311 clinicians in surgery in 489 German hospitals.

Measure(s). Burnout was measured by using the Copenhagen Burnout Inventory (CBI). The measurement of self-rated patient care was based on a 13 item instrument (Chirurgisches Qualitätsiegel) and two questions assessing the frequency of medical errors.

Results. About 48.7% of the clinicians meet the criteria for burnout according to the CBI. Moreover, in multivariate logistic regression analyses, burnout is significantly associated with perceived quality of care among male (odds ratios vary from 1.5 to 2.6) but not among female surgeons (odds ratios vary from 1.3 to 1.5).

Conclusions. The high prevalence of burnout in our study corresponds with former studies of burnout among physicians. Furthermore, the results of the study suggest a relationship between burnout and perceived quality of care among men. Thus, reducing burnout among surgeons could not only improve their health and well-being but also the quality of care.

Keywords: surveys, hospital care, medical errors, surgery, perceived quality of care, burnout

Introduction

Burnout is highly prevalent among physicians. This was shown in several studies from different countries and for different specialties, especially among residents and surgeons [1–6]. High rates of burnout were discussed as a possible result of a high demanding work environment that forces particularly young physicians into long working hours and sleep deprivation [1, 7]. Moreover, predictors of physician burnout are delayed gratifications, limited control and a loss of autonomy, imbalance between career and family, feelings of isolation and a lack of time for contacts with colleagues and research activities [1, 6, 8]. Beside burnout, consequences of physicians’ stress and workload are symptoms of depression and a higher rate of suicides compared with other professionals [1, 2, 6, 9].

Some studies have examined the association between burnout and quality of care [10–18]. Although samples and study designs considerably differ, most of these studies indicate higher risks for medical errors and suboptimal patient care among burnt out physicians [4, 10–12, 15–18]. However, these studies are restricted to a few countries and a few specialties, and only one recent study [18] is covering surgeons who are discussed to be a high-risk group for burnout [3, 6] and whose failures are particularly precarious for patients’ health. Moreover, results indicate gender differences concerning magnitude and effects of burnout [4, 6, 19–22]. The aim of this study is to evaluate the prevalence of burnout among female and male clinicians in surgery in Germany and to analyse whether there is an association between burnout and self-reported quality of care, including medical errors.
Methods

Population
The population included all clinicians in surgery working in general hospitals in Germany with a capacity of more than 100 beds with a general surgical and/or gynaecological ward. The data collection was based on a stratified probability sample, so large hospitals with many clinicians are sufficiently represented. Between March and June 2008, 922 hospitals divided into 681 (74%) general surgery wards and 241 (26%) gynaecological wards were asked for participation in written form. In hospitals with more than 600 beds, nine physicians were selected randomly, in smaller hospitals three physicians were selected, overall resulting in 3648 potential respondents. 489 and 1311 clinicians took part in the standardized mail survey, indicating a response rate of about 65% regarding the clinicians in participating hospitals. The sample was weighted for hospital size, ward and occupational position of the physicians.

The proportion of female clinicians in the sample is about 40% (30% in general surgery and 68% in the gynaecological wards). On average the participants had worked as physicians for 11.4 years. The sample comprised 9% chief physicians, 21% senior physicians, 24% residents with advanced training and 46% without advanced training.

Measures

Burnout was measured by the Copenhagen Burnout Inventory (CBI) [23, 24], which consists of three scales assessing personal, client and work burnout. In this study, we focus on personal burnout as this subdimension specifically indicates the physician's personal mental state. Personal burnout is defined as a state of prolonged physical and psychological exhaustion and is determined by the degree of physical and psychological fatigue and exhaustion experienced by the person [23, 24]. On a 5-point Likert scale, ranging from 'always' to 'never/almost never', physicians were asked to give information about the extent of their exhaustion. Beyond a total converted score of 50 points (maximum 100 points) the person is defined to be exposed to burnout [24]. Past studies achieved satisfactory results concerning reliability and validity [23].

Perceived quality of care was assessed by using a short version of a German instrument, called the Chirurgisches Qualitätsiegel (CQS) [25, 26] which was developed according to the Canadian Physician Achievement Review (PAR) [27, 28] (see Appendix). Generally, the CQS evaluates six different aspects of patient care: (i) professional competence, (ii) patient management, (iii) communication, (iv) teamwork and colleagueship, (v) clinic and practice management and (vi) professional development. The 5-point Likert scale ranges from 'very good' (5) to 'bad' (1). An explorative factor analysis reveals three dimensions/subscales: psychosocial care (5 items, Cronbach’s alpha = 0.81), diagnosis/therapy (4 items, Cronbach’s alpha = 0.82) and quality assurance (4 items, Cronbach’s alpha = 0.70). Psychosocial care refers to patient management and communication; diagnosis/therapy refers to professional competence and quality assurance refers to clinic management and professional development. For regression analyses, the subscales were dichotomized (suboptimal care and good/very good care). For each of the three subscales we calculated a sum score that was divided by the number of the respective items to assess the physicians’ average perception. Values of 3.5 or less are considered to indicate suboptimal care, i.e., physicians on average rate their quality of care less than good in the respective dimension. Perceived quality of care was additionally measured by two questions about the frequency of diagnostic and therapeutic errors ('I have made mistakes in diagnosis'/‘I have made mistakes in treatment’) using a 4-point Likert scale ranging from ‘never’ to ‘often’. Both questions were also dichotomized (‘never/seldom’ and ‘often/sometimes’).

Statistical analysis

To explore the association between burnout and self-reported quality of care multivariate logistic regression analyses were applied, adjusted for occupational position and job experience (in years) as these two variables were found to be associated with burnout as well as quality of care in previous exploratory analyses. The odds ratios and the 95% confidence intervals are displayed in the table. All analyses were calculated separately for men and women. Statistical software SPSS 15.0 was used.

Results

Table 1 displays the prevalence of burnout and the distribution of self-reported quality of care among German male and female clinicians in surgery. Nearly half of the sample is exposed to burnout, with a higher prevalence among women. More than 20% of the respondents perceive their quality of care as suboptimal concerning psychosocial care and diagnosis/therapy. About 75% regard their quality assurance as suboptimal. About 21% of the clinicians state that they sometimes or often make diagnostic errors; the respective rate for therapeutic errors is about 15%. There are significant gender differences in assessing quality of care. Whereas female clinicians in surgery rate their psychosocial care better than their male colleagues, self-reported quality of diagnosis/therapy and quality assurance is better among men.

Table 2 presents the associations between burnout and the five different aspects of perceived patient care for men and women adjusted for occupational position and job experience. In terms of the total sample, burnout is significantly associated with all aspects of perceived quality of care (psychosocial care, diagnosis/therapy, quality assurance, diagnostic and therapeutic errors). Elevated odds ratios of suboptimal patient care vary between 1.5 and 1.9 among physicians with burnout. However, gender-specific analyses reveal that the association between burnout and perceived...
quality of care is significant among male but not among female physicians.

**Discussion**

In this article burnout and self-reported quality of health care in a nationwide sample of 1311 clinicians in surgery in Germany were examined. A comparison of the prevalences and means concerning personal burnout (M = 47.2 in this study), with other studies also using the CBI, shows that burnout is more prevalent among clinicians in surgery than among other occupations [23]. A recent study among German hospital physicians (including surgeons) found similar rates of personal burnout (CBI) [19]. Thus, hospital physicians in general and clinicians in surgery in particular

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Distribution of personal burnout (CBI) and self-rated quality of care among clinicians in surgery in Germany: %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (n = 1311)</td>
<td>Men (n = 789)</td>
</tr>
<tr>
<td>Burnout (score ≥50)</td>
<td>48.7</td>
</tr>
<tr>
<td>Psychosocial care (suboptimal)</td>
<td>21.4</td>
</tr>
<tr>
<td>Diagnosis/therapy (suboptimal)</td>
<td>21.5</td>
</tr>
<tr>
<td>Quality assurance (suboptimal)</td>
<td>75.2</td>
</tr>
<tr>
<td>Diagnostic errors (sometimes/often)</td>
<td>21.2</td>
</tr>
<tr>
<td>Therapeutic errors (sometimes/often)</td>
<td>14.5</td>
</tr>
</tbody>
</table>

*χ² (Pearson).

<table>
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<tr>
<th>Table 2</th>
<th>Personal burnout (CBI) and self-rated quality of care: prevalences [n (%)], odds ratios (OR) and 95% confidence interval (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (n = 1311)</td>
<td>Men (n = 789)</td>
</tr>
<tr>
<td>Prevalence suboptimal care, n (%)</td>
<td>ORa (95% CI)</td>
</tr>
<tr>
<td>No burnout (score &lt;50)</td>
<td>115 (17.8)</td>
</tr>
<tr>
<td>Burnout (score ≥50)</td>
<td>154 (25.1)</td>
</tr>
<tr>
<td>No burnout (score &lt;50)</td>
<td>108 (16.4)</td>
</tr>
<tr>
<td>Burnout (score ≥50)</td>
<td>166 (26.6)</td>
</tr>
<tr>
<td>No burnout (score &lt;50)</td>
<td>452 (70.4)</td>
</tr>
<tr>
<td>Burnout (score ≥50)</td>
<td>491 (80.0)</td>
</tr>
<tr>
<td>No burnout (score &lt;50)</td>
<td>110 (16.5)</td>
</tr>
<tr>
<td>Burnout (score ≥50)</td>
<td>162 (20.9)</td>
</tr>
<tr>
<td>No burnout (score &lt;50)</td>
<td>67 (10.1)</td>
</tr>
<tr>
<td>Burnout (score ≥50)</td>
<td>119 (18.8)</td>
</tr>
</tbody>
</table>

*aAdjusted for gender, occupational position, job experience; bAdjusted for occupational position, job experience.
are exposed to high risks of burnout [1–6]. In terms of gender differences results are inconsistent. Some studies show that female physicians are at an increased risk for burnout [4, 6, 19–22] whereas respective reviews [4, 5, 29] indicate that there are no distinct gender-specific patterns among physicians and in the general population. The high rate (75%) of suboptimal quality assurance may be due to the administrative and bureaucratic character of this dimension. Rates of other dimensions of suboptimal patient care (psychosocial care, diagnosis/therapy) including medical errors vary between 15 and 22%. As designs differ considerably, it is difficult to compare these rates with those of other studies [10–18]. In terms of the association between burnout and quality of care, results show that burnt out male surgeons are significantly more likely to rate their quality of care as suboptimal. Associations are strongest with self-reported therapeutic errors. Thus, burnout is not only an indicator of poor health [1–6, 9] but also a compromising factor of quality in health care among male surgeons.

Previous studies also examined associations between burnout and quality of health care [10–18]. Although comparability is restricted as samples and study designs considerably differ, most of these studies also found higher risks for medical errors and suboptimal patient care among burnt out physicians [2, 4, 10–12, 15–18]. However, with one exception [18] these studies did not cover surgeons who are discussed to be a high-risk group for burnout [3, 6] and whose failures are particularly precarious for patients’ health. Only Shanafelt et al. [18] recently found a significant relationship between burnout and medical errors among American surgeons. Moreover, only a few studies conducted gender-specific analyses [10, 15], and these studies did not find consistent gender differences in the association between burnout and quality of health care. In our study, burnout is significantly associated with perceived quality of care only among male surgeons. One possible explanation for this difference between male and female surgeons is that burnout may be more closely linked to work-related factors among men than among women. In fact, some studies indicate that different factors are associated with burnout among male compared with female physicians [5, 8, 22, 30]. For example, in a study of mental health, job satisfaction and job stress among general practitioners, work-family conflict was the most significant correlate of high levels of negative mental well-being among women whereas demands of the job were less important. Among male physicians, the other hand, the work–home interface was least important, while demands of the job were among the more significant variables in the analyses [30]. As our study is one of the first analysing gender differences in the association between burnout and quality of health care among clinicians, it is a task of future research to analyse whether these differences can be confirmed and how they can be explained.

Although our study has several methodological limitations (see below), results presented imply that interventions aimed at reducing burnout risks among physicians may also improve the quality of health care. For such interventions it is important to consider that working conditions in general and psychosocial stress at work in particular are strong predictors of burnout among physicians [8, 9, 31–33]. In this regard, a Canadian study showed that burnout can be significantly reduced among healthcare providers by a participative intervention targeting the psychosocial job environment in an acute care hospital [34, 35]. On the basis of two established models of psychosocial stress at work (Demand–Control–Support Model [36], Effort–Reward–Imbalance Model [37]) the intervention aimed at reducing four adverse psychosocial work factors (high psychological demands, low decision latitude, low social support and effort–reward–imbalance). Such models allow theory-driven interventions for job related health promotion measures which decrease burnout risks among healthcare providers and may help to improve the quality of health care. However, there are only a few intervention studies exploring the long-term effects of such workplace interventions on burnout [2], and to our knowledge, there is no study that analyses the effects on quality of health care among clinicians in surgery.

Several methodological limitations of our study need to be considered. It is a cross-sectional study, and it is subject to the problem of common method variance as all variables are based on clinicians’ own reports. Thus, no causal inference can be drawn concerning the association between burnout and quality of care. This methodological problem calls for a prospective study design with subjective and objective quality indicators. In terms of the quality of the sample, different response rates can be calculated as data collection was based on a stratified probability sample (see the Methods section). About 53% of the hospitals that were contacted took part in the survey and 65% of the clinicians in the participating hospitals responded. The sample was weighted for hospital size, ward and occupational position of the physicians. Although sampling and weighting procedure aimed at generalizability of results, non-response must be considered as a limiting factor in interpreting our findings. Burnout was measured by the CBI [23, 24]. Studies provided support for its validity [23, 24] and the instrument was used in previous studies with health care providers [34, 35]. Compared with the more often used multidimensional Maslach Burnout Inventory (MBI) [29] personal burnout according to the CBI can be measured in one total score. A study using the MBI and the CBI among dentists in Australia [38] concludes that there are similarities of the two measures and that the CBI has excellent psychometric properties and is an appropriate measure of burnout among health care professionals. In terms of perceived quality of care, we used an instrument called CQS [25, 26] that is based on the Canadian Physician Achievement Review [27, 28]. Although this instrument was specifically developed for the assessment of surgical care by the German Society of Surgery and the psychometric properties in our study are satisfactory, it cannot be regarded as sufficiently validated. This also holds true for the two questions about the frequency of diagnostic and therapeutic errors.

**Conclusion**

Despite these limitations, this study confirms that burnout is a frequent mental health problem among physicians,
especially among clinicians in surgery. Moreover, it shows that burnout is significantly associated with self-reported quality of health care among German male clinicians in surgery. Thus, interventions aimed at reducing burnout risks among clinicians may also improve the quality of health care. However, as this is one of the first studies among surgeons further research is needed to examine the associations and pathways.

Acknowledgments

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Appendix

Measurement of perceived quality of health care according to the CQS [26]/Canadian Physician Achievement Review (PAR) [27]:

‘In the following various aspects of physicians’ behaviour are described. Please rate the quality of your own performance concerning these aspects’.
1. Perform surgeries.
2. Assess diagnostic information.
3. Make correct diagnoses.
4. Select appropriate treatments.
5. Maintain medical records.
7. Consider psychosocial aspects of illness.
8. Manage health care resources efficiently.
9. Evaluate medical literature to optimize clinical decision-making.
10. Participate in implementation of quality improvement programmes.
11. Show empathy for patients and their relatives.
12. Involve patients in decision-making.
13. Consider advance health care directives.

Subscales:
Psychosocial care (items 6, 7, 11–13)
Diagnosis/therapy (items 1–4)
Quality assurance (items 5, 8–10)

Scale: ‘very good’, ‘good’, ‘fair’, ‘not so good’, ‘bad’ (+ not applicable)

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