

Stressors, emotional exhaustion and aversion to patients in residents and chief residents – what can be done?

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Summary

Questions under study: The goal of the study was to identify (1) specific stressors in the work of residents and chief residents (R and CR) and their consequences, and (2) possibilities for improvement.

Methods: Written questionnaire of 80 physicians at a Swiss public primary and secondary referral center and teaching hospital surveying stressors and resources in the working conditions as well as associated subjective strains. Selective observation of work activities of 14 representative R and CR.

Results: *Stressors:* R and CR reported a deficit in 6 out of 10 expectations regarding their work (greatest deficits: lack of time off, lack of future career prospects and of clear management). The deficits for the R/CR group differed in part highly significantly from deficits reported by directing physicians and medical directors. Work intensity was experienced as high or too high in 72% of R and 67% of CR. *Strains:* 41% of R and 43% of

CR met criteria for emotional exhaustion, and 34% of R and 14% of CR reached critical values for aversion to patients. These strains correlated significantly with the stressors “overburdened through heavy workload”, “subjective work intensity”, “inadequate leisure time”, and “lack of a right to a say in important matters” (all p between <0.001 and <0.01).

Conclusions: Work-related emotional exhaustion and aversion to patients reached a critical mass in R and CR and was underestimated by both physicians and hospital management. The significant correlations between stressors and strains point to the main areas for improvement: reduction in work intensity and workload, change in style of leadership and management, development of new work models.

Key words: residency; workload; burnout; emotional exhaustion; personnel management

¹ Resident: in Switzerland, “Assistenzarzt”: physicians who have graduated medical school and are training for a specialty title, mostly for a period of time of 5–8 years.

² Chief resident: in Switzerland, “Oberarzt”: physicians who supervise residents, most of them having completed a specialty title.

³ The most important innovations in the Canton of Berne were: 55-hour maximum per week starting in 2001 (from 2004: 50 hours); hours in excess of the maximum qualify as overtime and must be compensated with time off or pay; right to 2 days off per week and at least 2 weekends off per month; rest periods and regulation of length of shifts.

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Introduction

For some years, more and more attention has been directed to the increasing workload of residents¹ and chief residents² and its consequences [1–5]. A 1998 study in the Canton of Berne, Switzerland, found that residents (R) worked an average of 66.9 and chief residents (CR) 64 hours per week [6]. Since then, working conditions have been stipulated by contracts (collective labour agreements³) and law. However, there is a lack of financial means for realisation of the new conditions, and the hospitals are not prepared to deal with the changes.

Looking toward implementation of the new regulations, some hospitals in the Canton of Berne launched a project to address work processes in R

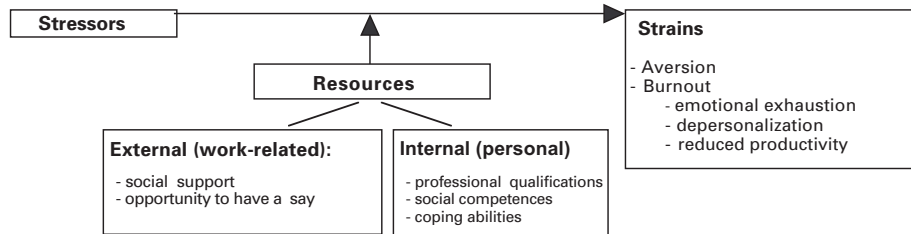
and CR (“APROZ Project”), for a description of the project at *Spitalzentrum Biel*, see [7, 8]. The present paper describes significant aspects of the APROZ Project at *Spitalzentrum Biel*, identifying specific stressors in the work of R and CR, showing the relation of stressors to specific consequences (strains), and deriving possible optimisation measures. The following introductory section gives the reader some background in work psychology.

Work stressors, resulting strains, and resources

In occupational sciences in German-speaking countries, Rohmert and Rutenfranz’s conception

Figure 1

Simplified model of the effects of stressors-resources-strains.

**Table 1**

Written questionnaire respondents: description of sample.

| | Residents (R) | Chief residents (CR) | Directing physicians and medical directors (DP/MD) | Total |
|--|---------------|----------------------|--|-------|
| Received questionnaire | 44 | 22 | 26 | 92 |
| Response to questionnaire | 39 | 21 | 20 | 80 |
| Response rate in % | 87 | 95 | 77 | 87 |
| Distribution of sexes: | | | | |
| Women in % | 51 | 19 | 10 | 33 |
| Men in % | 49 | 81 | 90 | 67 |
| Average age | 31 | 38.6 | 49.7 | 37.7 |
| Average years of service at present hospital | 1.2 | 2.3 | 11 | 4 |

of stressors [9] and strains [10] predominates. *Stressors* are understood as all external factors acting on the person. *Strains* are the subjective consequences of the stressors arising in the person [11]. Different people respond to the same objective stressor in different ways, with different kinds of strains, depending on their subjective evaluation of the stressor. *Resources* offer possibilities for coping with stressors [12]. Figure 1 shows the interaction of stressors, strains, and resources.

Semmer [13] distinguishes three different levels of *stressors*: macro, meso, and micro. At the macro-level we find problems that affect the relationship between work and other areas in life (ie, insufficient recognition of one's work (poor work prestige) or working conditions that are in conflict with family life). The meso-level represents factors within the organisation (poor prospects for promotion, poor information policy within an organisation, or social conflict with fellow workers or superiors). The micro-level encompasses task-related and organisational determinants that hinder the individual's efficient performance (for example, time pressure, poor work organisation, constant interruptions). Further important factors at the micro-level of activities in health care are:

number of hours of a work shift, workload, and sleep deprivation [5, 14–16].

Strains are divided into physical, mental, and emotional consequences of stressors [17]. *Burnout* is a special syndrome of depersonalisation (ie, an unfeeling and impersonal response toward recipients of one's service, care, treatment, or instruction [18]), emotional exhaustion, and decreased effectiveness at work. Professions that share an intense involvement with people – physicians, nurses, educators – are prone to experience burnout (“Helfer-Leiden”, see [19]). As a consequence of inequality in social exchange between physicians and patients, physical and emotional exhaustion can result, which in the extreme case lead to aversion to patients. As a result of organisational inequalities affecting physicians as employees, their commitment to the institution may suffer [10].

The degree of strain experienced by a person is not only influenced by the severity of the stressor, but also by the availability of *resources*. The most important resources in the work situation are social support and the opportunity to have a say. Internal (personal) resources include professional qualifications, social skills, and problem-solving ability.

Methods

Sample

All 92 physicians at Spitalzentrum Biel⁴ were invited to participate in the written survey. The questionnaire was distributed to all participants, and the responses were sent for evaluation anonymously to the Institute for Work Research and Organisational Consultancy in Zurich. From mid-December 2000 to January 2001, 80 persons completed the questionnaire, which represents a response rate of 87%. Table 1 describes the sample of participants in detail.

Observations of work activities (conducted mid to end of March 2001) were conducted with 9 R and 5 CR at various clinics of the hospital. The medical director of the particular clinic, together with the project management, chose representative persons (defined as “typical” R/CR with average medical abilities and knowledge of hospital structures) and representative medical services (defined as a “typical” working day with respect to nature and expected duration of tasks).

⁴ A Swiss public primary and secondary referral hospital with 293 beds, covering an area of 130'000 people and being a teaching hospital for the following specialties: anesthesia, cardiology, general surgery, gynecology/obstetrics, intensive care, internal medicine, nephrology, orthopedic surgery, pediatrics, radiology, thoracic and vascular surgery, urology (www.szb-chb.ch).

The Questionnaire

Stressors

Specific stressors were identified following Flanagan [20]. The questionnaire tapped the subjective importance of 31 aspects related to work as well as physicians' corresponding degree of satisfaction regarding fulfilment of those aspects in their current work situations (for a detailed description, see [20]). The difference between ascribed importance and satisfaction yielded a discrepancy value (deficit), which is understood as a stress factor [21]. Further work-related stressors were: estimated and measured work hours, experienced work intensity and (not fulfilled) desire for part-time jobs. Task-related stressors were assessed using the five-point scale on "quantitative overtaxing through work tasks" taken from the "SALSA" questionnaire – *Salutogenetische Subjektive Arbeitsanalyse* (ie, Salutogenetic Subjective Work Analysis) by Udriș [22].

Strains

Two scales from Hacker und Reinhold's Stresses and Strains Screening in Human Services [23] were used to measure strains: "emotional exhaustion" and "aversion to clients". The degree of agreement was captured on a seven-point scale, ranging from "disagree completely" to "agree completely".

Resources

External resources were assessed using the following subscales from the "SALSA" by Udriș [22]: "opportunities to have a say", "room for autonomy (room for individual decision-making and control)", "social support from superiors", "social support from fellow employees", and "superiors interested in the well-being of employees". Agreement was measured on a five-point scale from "almost never/false" to "almost always/true".

Observation of work activities

Representative physicians were observed for the entire duration of a representative work shift. Using handheld computers, observers (trained members of the Institute for Work Research and Organisational Consultancy in Zurich) registered the length of time physicians spent on each observed activity according to a predetermined, empirically derived category system (described in details elsewhere [7, 8]).

Statistical analyses

The t-test for independent samples was used for comparison of the means. Because of the small n in the CR group (see Tab. 1) gender-specific comparisons are only done for the R group. Spearman's correlation coefficient (r_s) was used to calculate correlations among stressors, strains, and resources.

Results

Results of the written survey

Work situation expectations and stress through deficits

Residents and chief residents (R and CR) rated 21 of the 31 possible work aspects as important or very important to them. The most important job expectations were good relations with colleagues, followed by opportunities for learning (see Figure 2). With regard to the ten most important expectations, there were no significant differences between R and CR. Between the group of R/CR and the group of directing physicians⁵/medical direc-

tors⁶ (DP/MD) a significant difference was found only for "right to a say on important matters" ($t = 2.34, p = 0.024$).

The greatest deficits were reported for six of the ten most important aspects of work for residents and chief residents (see Figure 3). The greatest deficit was the inadequate time off allowed by the job.

A comparison of the extent of deficits for R and CR revealed no statistically significant differences. Significant gender differences in the R group (with

⁵ Directing physician: in Switzerland, "Leitender Arzt": experienced doctors with one or more specialty titles, who are responsible for a specialty department and have management authority.

⁶ Medical director: in Switzerland, "Chefarzt": final medical and managing authority and responsibility for the department concerned.

Figure 2

The ten most important work expectations of residents and chief residents and the corresponding values for directing physicians/medical directors.

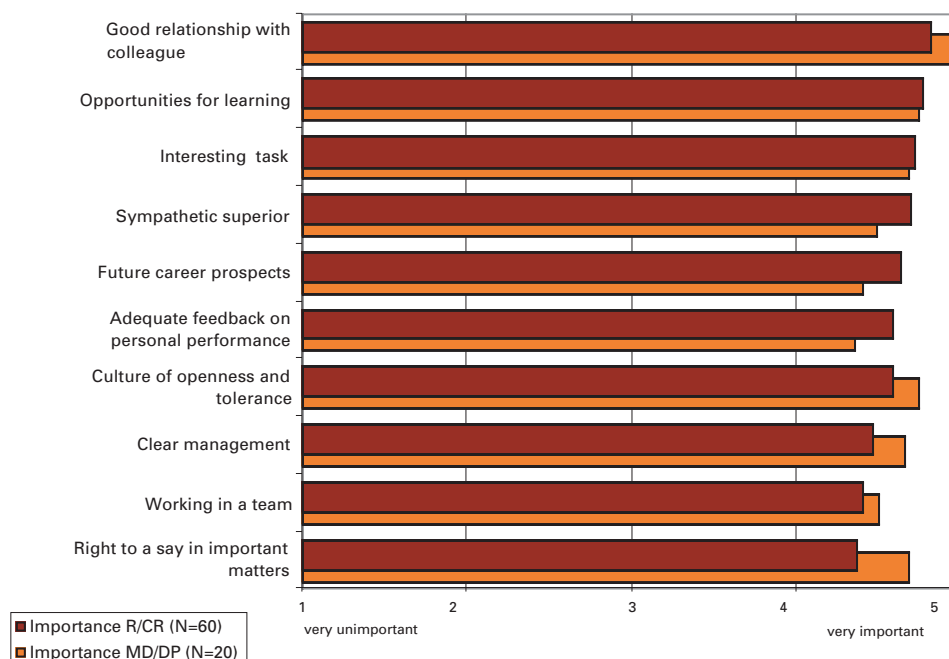
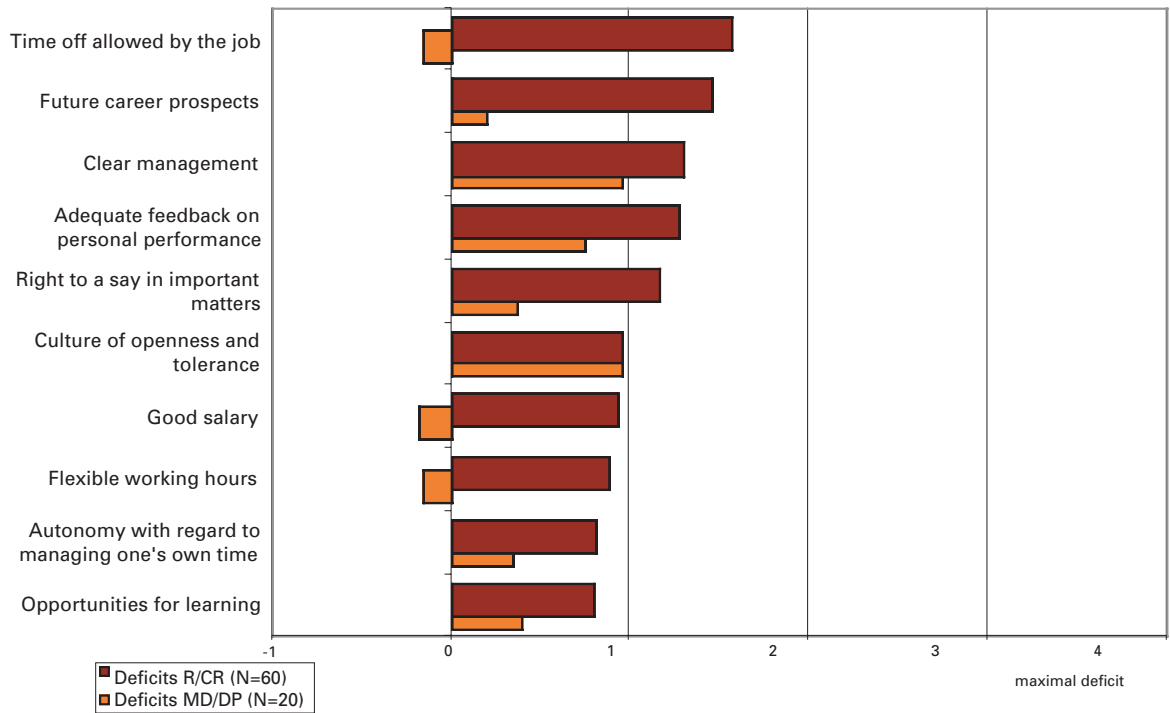


Figure 3

The ten greatest work-related deficits for residents/chief residents and the corresponding values for directing physicians and medical directors.

**Table 2**

Comparison of means between R/CR and DP/MD for "external resources experienced".

| External Resources | Mean (SD) | | t-value df = 78 | Significance level |
|--------------------------------|---------------|----------------|--------------------|--------------------|
| | R/CR (n = 60) | DP/MD (n = 20) | | |
| Right to have a say | 3.02 (.77) | 3.85 (.83) | 4.05 | P = .001 |
| Autonomy to manage time | 3.38 (.52) | 3.95 (.66) | 3.94 | P = .001 |
| Social support from superiors | 3.76 (.79) | 3.68 (.95) | -0.36 | P = .719 |
| Social support from colleagues | 3.85 (.63) | 4.12 (.56) | 1.68 | P = .095 |

Note: SD = standard deviation, df = degrees of freedom

higher deficits in women than in men) were only found for "culture of openness and tolerance" ($t = 2.08$, $p = 0.045$).

Significant differences were found between residents/chief residents and directing physicians/medical directors in the extent of the deficits (Figure 3). The greatest differences were revealed for: time off allowed by the job ($t = -4.02$, $p < 0.001$), future career prospects ($t = -4.11$, $p < 0.001$), right to a say on important matters ($t = -2.64$, $p = 0.01$), good salary ($t = -3.17$, $p = 0.002$), and flexible work hours ($t = -2.86$, $p = 0.005$).

Stressors: Work hours, work intensity and workload

The questionnaire revealed a discrepancy between measured and estimated work hours. Work hours as measured by R and CR themselves (by writing down actual working hours: R 56.7, CR 58.3 hours per week) were lower than their (retrospective) estimates of their work hours at the time of survey (R 60.9, CR 62.6 hours per week).

Work intensity was experienced as high by 69% of residents and 62% of chief residents, 3% of residents and 5% of chief residents experienced it as too high. Of all the physicians, only medical directors did not feel overloaded by work intensity.

A less than full-time position was desired by 44% of residents and 33% of chief residents. No gender-specific differences were found on this variable in the R group. Nine residents wished to have a position that was reduced by 10–20%, and 8 residents desired a reduction of 25–50%. Six chief residents desired a reduction of 10–20%, and one chief resident desired a reduction of 50%.

One-third of the residents and chief residents felt overburdened by the workload often or most of the time; one-quarter of the directing physicians/medical directors felt this way. There were no significant differences between R and CR and none between R/CR and DP/MD.

Resources

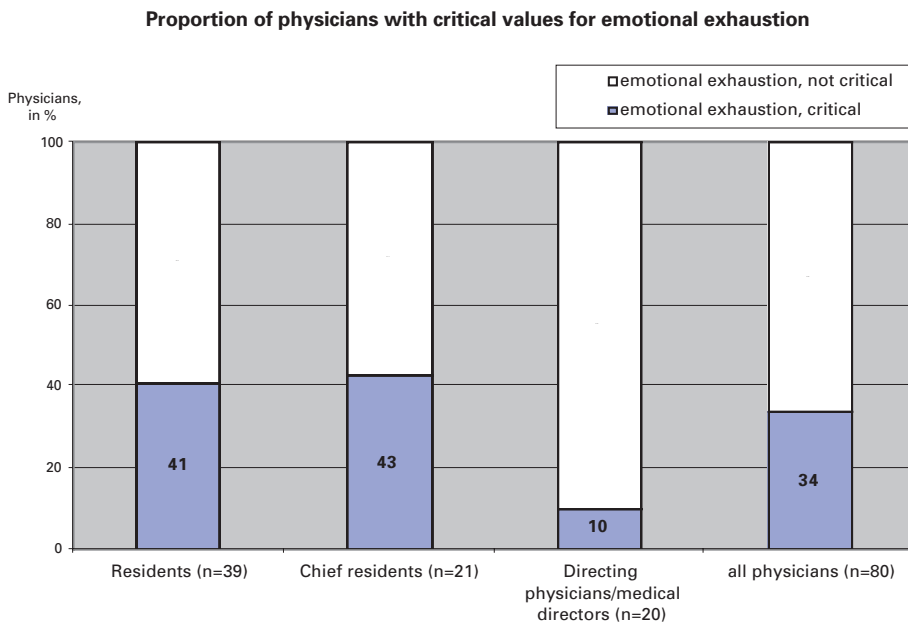
Investigation of the participants' experience of external resources (see Table 2) found, with one exception, no differences between R and CR. The exception was social support from superiors: CR ($m = 4.1$) experienced greater social support than R ($m = 3.6$) ($t = 2.47$, $p = 0.017$).

Specific strains

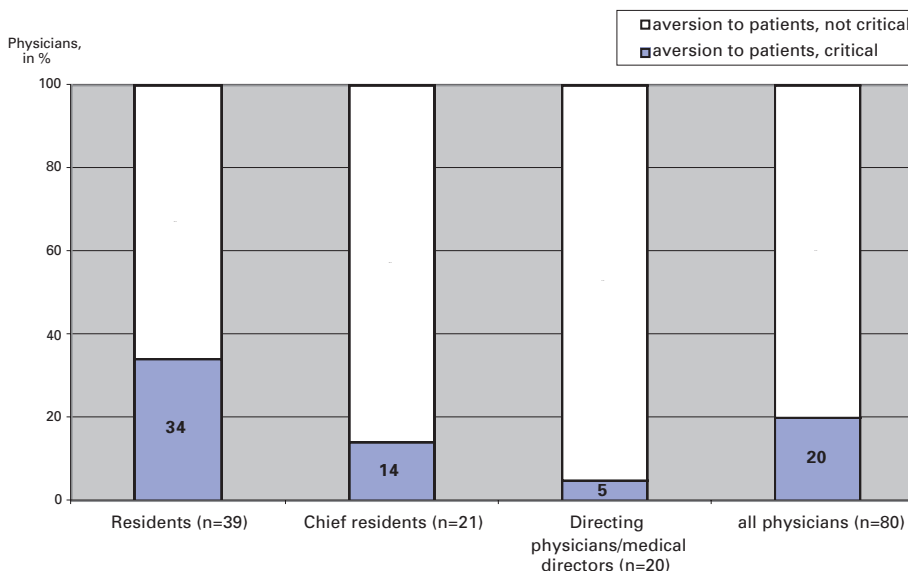
Chief residents showed higher values for the strain of "emotional exhaustion", while residents

Figure 4

Strains experienced by the different groups of physicians. Note: critical values: persons with stanine values of 7, 8, or 9.



Proportion of physicians with critical values for aversion to patients



showed higher values for “aversion to patients” (see Figure 4).

Correlations between stressors and strains

Table 3 shows correlations between stressors and strains.

Results of the observations of work activities:

The workday of residents and chief residents was made up of the following activities (in percentage of day’s work): medical procedures⁷ 44% for both groups; health service and institutional administration 21% (R), 22% (CR); walking and waiting time 9% (R), 13% (CR); breaks 8% (R), 7% (CR); personal education 3% (R), 2% (CR); teaching students 1% (R), 9% (CR)⁸; and other activities including project work 14% (R), 3% (CR). The average number of work hours on the observation days was 12.61 hours for residents and 12.35 hours for chief residents.

The structure of the residents’ and chief residents’ workday was remarkably hectic with frequent switches between activities. On average, 360 shifts in activities were observed. In our observations we found up to 42 (on average 15) disruptions of activity caused by pagers (“bleeps”) and telephone calls per day. The longest period of uninterrupted activity observed was 3.5 hours (during an operation). In not-operating specialties 1 to 5 interruptions per hour were observed. The most frequent reasons for interruptions were talking to nurses or physicians and telephone calls.

Redundant actions characterised the everyday work of residents and chief residents. These included double recording of patient information, taking medical histories (eg, same parts of history recorded first by resident in the emergency room and later by resident of the ward), performing examinations, and reporting of findings and results. Moreover, physicians performed a number of ac-

⁷ Medical procedures included medical history taking, examination, diagnostic and therapeutic procedures.

⁸ The hospital of Biel hosts up to 40 students per year from several Swiss and foreign universities. The students stay for 1-4 months (depending on specialty). They work together with residents and get special lectures from chief residents, directing physicians and medical directors.

Table 3

Stressors and strains: Correlations between results of the analysis for residents and chief residents (Spearman's correlation coefficient r_s).

| Stressor/Resource | Strain | | | |
|---|----------------------|--------|----------------------|--------|
| | Emotional exhaustion | | Aversion to patients | |
| | r_s | P | r_s | P |
| Work hour-related | | | | |
| Quantitative overload (stressor) | 0.64 | <0.001 | 0.62 | <0.001 |
| Wish to reduce workload not met (stressor) | 0.39 | <0.01 | 0.28 | <0.05 |
| Number of work hours (stressor) | 0.14 | ns | 0.11 | ns |
| Experienced work intensity (stressor) | 0.42 | <0.001 | 0.40 | <0.01 |
| Inadequate time off (deficit) | 0.50 | <0.001 | 0.41 | <0.01 |
| Restricted autonomy to manage time (deficit) | 0.39 | <0.01 | 0.36 | <0.01 |
| Restricted flexibility of working time models (deficit) | 0.31 | <0.05 | 0.23 | ns |
| Management/Culture | | | | |
| Right to have a say (resource) | -0.48 | <0.001 | -0.42 | <0.001 |
| Autonomy to manage time and activities (resource) | -0.39 | <0.01 | -0.25 | ns |
| Social support from superiors (resource) | -0.39 | <0.01 | -0.38 | <0.01 |
| Social support from colleagues (resource) | -0.34 | <0.01 | -0.33 | <0.05 |
| Superiors' regard for interests of employees (resource) | -0.34 | <0.01 | -0.37 | <0.01 |
| Restricted openness and tolerance (deficit) | 0.44 | <0.001 | 0.22 | ns |
| Inadequate feedback (deficit) | 0.16 | ns | 0.17 | ns |
| Insufficiently clear management (deficit) | 0.10 | ns | 0.18 | ns |
| Other | | | | |
| Deficit regarding salary (deficit) | -0.01 | ns | -0.04 | ns |
| Lack of future career prospects (deficit) | 0.04 | ns | -0.03 | ns |
| Opportunities for learning (deficit) | -0.10 | ns | -0.15 | ns |

Note: Positive correlations indicate that the two values move in the same direction: the higher the stressor/deficit, the higher the strain. Correlations with a negative value mean that the two values move apart: the lower the resource, the higher the strain. Abbreviation: ns = not significant.

tivities that do not need to be conducted by physicians (non-medical activities: finding and produc-

ing documentation, filing patient documents, making appointments, meetings and lectures).

Discussion

The strain experienced by residents and chief residents is high. In our study, 41% of residents and 43% of chief residents met the critical values for emotional exhaustion, and every third resident reported considerable aversion to patients. Comparable investigations on work strain in physicians found similarly high values: In a Cantonal Hospital in Switzerland, emotional exhaustion was found in 27% of chief residents and 43% of residents [7]. Firth-Cozens & Greenhalgh [24] reported finding strains in the form of irritability and anger in 40% of the 225 British physicians they studied.

Our data show a decrease of strain along the rising level of the hospital hierarchy. The reason for that probably lies in the decreasing number and intensity of patient contacts ascending the physicians' hierarchy (most intensive contacts for residents). In addition, residents cannot be as selective in their contacts with patients as their superiors (little say in task assignment of daily work). Other studies have also found differences among the various medical groups in hospitals: In a survey by Kash et al. [25], house staff (interns and residents)

showed higher levels of emotional exhaustion and a feeling of emotional distance to patients than medical oncologists, whereas nursing staff tended to show more physical symptoms of strain.

The daily experiences with directing physicians and medical directors suggest consequences of overload for these groups as well (reduced commitment to the clinic, for example). Therefore, unawareness of and, for reasons of social prestige, unwillingness to report strain might be additional important reasons for the strain differences. Sexton et al. [26] have also revealed a lack of accurate self-perceptions in hospital personnel: they found that physicians and nurses did not recognise excessive fatigue and underestimated the danger of errors in performance. We believe inadequate recognition of personal strain among leading physicians and medical directors is one of the main reasons why less stressful work models are so slow in being developed.

The amount of time off, flexibility in working hours, and salary were experienced as deficits in residents and chief residents, yet were not a deficit

for directing physicians and medical directors. We believe that age, sex, and status differences as well as differing future prospects play an important role in this context. Medical directors (average age 49.7 years, proportion of women 10%) have been successful in the existing system and have, through the years, arranged their private and professional lives in accordance with the strains. In contrast, residents (average age 31 years, proportion of women 51%) find it more important to lead "balanced lives, in which in addition to professional fulfilment there is adequate time for recreation and for family life and friends" [8]. Moreover, in the health care system, the career prospects of the upcoming generation of physicians are rather unfavourable. Along with this, younger physicians are less willing to be obliged to cope with the stressors. According to our results, the generation gap is an important factor that needs to be considered when optimising the work situation of R and CR.

As for limitations of the study, the in part very high levels of correlation raise questions as to their accuracy or to the possible presence of measurement problems. As both stressors/resources and strains were tapped by means of a questionnaire, there may be insufficient differentiation between dependent and independent variables. It is also conceivable that the participants' responses reflect the influence of unknown third variables (such as negative emotions).

Approaches to optimisation

Our correlations (Table 3) demonstrate that important aspects of leadership, management and culture of an institution, as well as working conditions (quantitative overload, work intensity, inadequate leisure time) are significantly related to strains. These results are consistent with a prior study [15]. Yet the number of work hours alone did not correlate significantly with the strains, a finding also reported by Tyssen et al. [27]. On the basis of our data we can derive two main strategies for reducing strains in R and CR:

1. *Elimination of stress factors:*
 - *Reduction of workload:* separation of medical from non-medical tasks and increased use of technology support. Non-medical activities should be assigned to trained personnel (for example, administrative activities assigned to secretaries). Implementation of technology aids, such as medical histories in electronic form accessible through a network, can reduce redundant activities and eliminate time-consuming searching and organising of clinical results. However, there is a danger that elaborate software can tempt physicians to exaggerate the quality of results (over-perfect reports when patients are discharged) rather than to reduce the amount of work.
 - *Reduction of work intensity:* bringing some calm into the workday by reducing the large num-

ber of shifts between activities and the number of interruptions. Increasing discipline in the use of the telephone and implementation of more scheduled rather than impromptu discussions (for example, ward-rounds) and daily agendas are possible approaches. As a further measure, electronically accessible databases would reduce the number of disruptions by questions from colleagues and at the same time increase the quality of interfaces (simple access to patient data).

2. *Building up of external resources:*

- *Adaptation of structures, style of leadership and management:* increased social support from superiors as well as a culture of openness and tolerance can reduce the strains. Of key importance is the need for physicians to have some control over their working routine – some flexibility and autonomy in managing their time and the tasks of the workday. Often neglected leadership and management tasks that require greater attention and efforts include the further medical training of residents and chief residents as well as support of individual professional career planning (this was the second largest deficit experienced by R and CR).
- *Development of new work models:* in our findings it was not work hours per se, but rather the lack of leisure time caused by work hours that correlated highly significantly with the strains. Our data also show that salary or overtime pay do not compensate adequately for the consequences of work stress. New work models will have to take into account the desire for more leisure time (management of time off rather than management of overtime). This also means setting workloads that can be performed within the work hours stipulated by the regulations (realistic volume of tasks), creating more part-time and job-sharing positions, and creating positions in such a way that physicians may be compensated for occasional overtime or weekend shifts by time off.

Conclusion

Work-related emotional exhaustion and aversion to patients have reached a critical mass in residents and chief residents and was underestimated by both physicians and hospital management. The highly significant correlations between stressors and strains point to the main areas for improvement: reduction in work intensity and workload, change in style of leadership and management, development of new work models.

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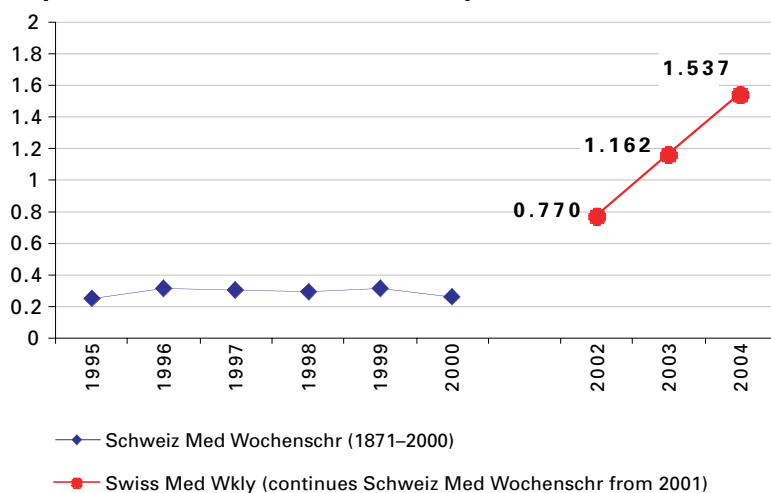
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