Peer reviewed article

Junior physicians' workplace experiences in clinical fields in German-speaking Switzerland

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Summary

Background and objectives: To date, there have been several prospective cohort studies investigating the workplace experiences of junior physicians, but with limited focus on gender issues. The objective of the present study is to explore the workplace experiences of first-year residents according to gender, type of training hospital, and clinical field.

Methods: Data reported are from the second assessment of the longitudinal Swiss physicians' career development study, begun in 2001. In 2003, 497 residents (54.7% females, 45.3% males) assessed their workplace conditions, social support at work, and effort-reward imbalance.

Results: There are few, but relevant, gender-related differences in workplace experiences, with female physicians experiencing less mentoring and higher over-commitment, yet more positive social relationships at work. In a multivariate model, significant differences in some workplace variables with regard to type of training hospital and/or clinical field are found: workplace conditions are rated worse in type "A" hospitals (university and cantonal hospitals) than in type "B"/"C"/"D" hospitals (regional hospitals and highly specialised units), and in surgical fields than in internal medicine. In "A" hospitals mentoring is assessed as better, but positive social relationships as worse. Both scales are rated worse in surgical fields than in internal medicine. The effort-reward imbalance (ERI) is rated significantly higher (unfavourable) in "A" hospitals than in "B"/"C"/"D" hospitals, regardless of gender and clinical field. Significantly more subjects with an ERI quotient above 1 (which is unfavourable) work in "A" hospitals, and in surgical fields regardless of hospital type. Of the total sample, 81 subjects (16.3%), 41 males and 40 females, show an ERI quotient above 1. The greater the workload, the worse the rating of workplace conditions, effort-reward imbalance, and over-commitment.

Conclusion: Institutional determinants are crucial factors for the workplace experiences and first career steps of junior physicians. Medical educators, especially those in "A" hospitals, should become more involved in structured residency programs and be aware of potential gender inequalities in the career support of female physicians.

Key words: junior physicians; workplace experiences; effort-reward imbalance model; training hospitals; clinical fields

Introduction

There are several longitudinal studies on residents' workplace experiences from the United States, and one each from Great Britain, Norway, and Germany. Some of the US resident studies focus on the quality of residency training programs, factors affecting a resident's choice of a certain speciality, and sources of stress, such as incompatibility between the resident's skills and personality traits and the chosen speciality [1–3]. A recent US study [4] reports that a controllable lifestyle is becoming an increasingly important factor in physicians' career decisions. The British study focuses on employment conditions, speciality choice, and work-life balance [5]. Some British authors report on the relationship between speciality choice, stress, and personality [6]. The Norwegian study investigates speciality choice [7, 8] and mental health issues in medical students and junior physicians [9, 10]. The German BELA-study [11] comprises a selected sub-sample of physicians and focuses primarily on career advancement, ie, employment conditions. Most of the published cohort studies to date started in the mid-1990s. Since then, sweeping changes have occurred in medical education, the hospital environment, and the residents' employment situation, encompassing the

The study was supported by grants from the Swiss National Science Foundation (NF Nos. 3200–061906.00 and 3200 BO-102130).

financial constraints of health budgets, greater administrative demands, and an increasing number of women graduating from medical schools and entering residency. These factors change both the workplace ethos *(Betriebskultur)* of a hospital and the training conditions encountered by junior physicians during their residency. Our study is the first prospective physicians cohort study in Switzerland investigating individual and institutional career determinants of junior physicians. Data of the first assessment are published in a previous issue of this journal [12]. In Switzerland, residents are asked each year to evaluate the quality of their training institution [13, 14], but these assessments are only cross-sectional. The workplace- and leadership ethos *(Betriebs- und Führungskultur)* had the strongest impact on the overall assessment of the further-training institutions. As described in several studies [15–18], sources of unfavourable workplace conditions are time pressure, stress at work, inadequate leadership, lack of control over work, and poor social support. These dimensions are related to the stress model of Karasek & Theorell [19]. The workplace experience is also influenced by the reciprocity of effort expended and rewards received in the work situation, according to the effort-reward imbalance model (ERI) of J. Siegrist [20]. To date, failed reciprocity (high cost/low gain) has not been widely examined in physicians' work in hospitals. Effort-reward imbalance at the outset of a physician's professional career is likely to lead to a decision not to pursue a demanding career.

To date, there has been no in-depth investigation of residents' institutional experiences at the outset of their speciality training, and the impact of these experiences on further career paths from a gender perspective. The main aim of our longitudinal study of a cohort of medical school graduates is therefore to evaluate the individual and institutional career determinants from the point of view of gender. It is assumed that negative workplace experiences will influence women physicians' career choice and career paths even more than their male colleagues.

The objectives of the present paper are (1) to explore junior physicians' workplace experiences in their first year of residency according to gender, in the total sample; and (2) to investigate differences in workplace experiences with regard to type of training hospital, clinical field, and gender, in a subsample.

Methods

Study design, sample development, and study sample

The study is an ongoing *prospective survey of a cohort of graduates* of the three medical schools in German-speaking Switzerland, beginning in 2001 (T_1). (Details of the study design and sample recruitment are described in a previous issue of this journal [12]). Subjects were re-evaluated after two years in 2003 via a postal questionnaire (T_2). By then, they had worked in hospital as doctors for about 12–15 months. Table 1 shows the *sample development* from T_0 (questionnaires sent to all registered graduates at the medical schools of Basel, Berne, and Zurich) to T_1 and T_2, for participants, non-participants and "dropouts". There are no significant differences between the dropouts (T_1–T_2) and the subjects participating at both measurements with regard to socio-demographic data, personality traits, and career-related variables at T_1. This paper presents the data of the second assessment. To investigate the issues of this paper, 497 participants (272 females [54.7%], 225 males [45.3%]) were included in the analyses. We plan to conduct further assessments every two years throughout the participants' specialist studies.

To ensure participants' anonymity, the returned questionnaires were only identified by a code. The respondents sent their addresses to an independent address-administration office, allowing for follow-up.

Table 1

Sample and sample development of the prospective study.

		addressed sample T_0 (2001) n (%)	non participants T_0–T_1 n (%)	sample T_1 (2001) n (%)	"drop-outs" T_1–T_2 n (%)	sample T_2 (2003) n (%)
Gender	female	487 (48.5)	107 (37.5)	380 (52.9)	97 (49.2)	283 (54.2)
	male	517 (51.5)	178 (62.5)	339 (47.1)	100 (50.8)	239 (45.8)
Age in years	mean			27.4	27.6	29.3
	range			23–44	23–44	26–44
Civil status	single			677 (94.2)	181 (91.9)	466 (89.3)
	married			42 (5.8)	16 (8.1)	55 (10.5)
	divorced			0	0	1 (0.2)
Partner	present			474 (66.2)	120 (61.2)	395 (76.4)
	absent			242 (33.8)	76 (38.8)	122 (23.6)
	data missing			3	1	1
Children	yes			26 (3.6)	9 (4.6)	24 (4.6)
	no			677 (96.4)	188 (95.4)	494 (95.4)
	data missing			16	–	4
Total		1004 (100)	285 (100)	719 (100)	197 (100)	522* (100)

* The following subjects were not included in the further data analyses of this paper: 4 subjects who had embarked on a professional career outside medicine at T2, 21 participants with missing data.

Workplace characteristics and distribution of the residents

The workplaces are categorised as follows: Type "A" hospitals: university hospitals or county hospitals, accredited for the whole of speciality training; type "B" hospitals: regional hospitals, accredited for at least two years' training; type "C" and "D" hospitals: small regional hospitals or highly specialised units, accredited for one year of training; research institutions; workplace not otherwise specified.

Distribution of the residents working at various *training institutions* related to 272 females (100%) and 225 males (100%): *Type "A" hospitals*: 31.2% females, 35.0% males; *type "B" hospitals*: 42.2% females, 33.6% males; *type "C" and "D" hospitals*: 20.2% females, 18.6% males; *research institutions*: 3.8% females, 5.9% males; *workplace not otherwise specified*: 2.7% females, 6.8% males.

Clinical fields and distribution of the residents

Surgery, gynaecology & obstetrics, urology, and orthopaedics were categorised as *surgical fields*; *internal medicine* comprised all subspecialties of internal medicine. Distribution of the 272 female (100%) and 225 male physicians (100%) was as follows: *Surgical fields*: 52.1% females, 46.9% males; *Internal medicine*: 28.1% females, 32.2% males; *High-technology fields*: 6.5% females, 10.0% males; *Psychiatry*: 3.8% females, 1.9% males; *Paediatrics*: 3.0% females, 2.4% males; *Others*: 6.5% females, 6.6% males.

Employment and workload

Of the participants, 96.3% declared themselves in full-time *employment*; 3.7% worked part-time. Participants reported a mean workload of 58.3 hours per week (SD 8.8 hours, range 24–90 hours). There were no significant differences according to gender, type of training hospital, or clinical field.

Instruments

The *workplace experiences* were assessed by the following components:

*Workplace Conditions Short Questionnaire (*Kurz-Fragebogen zur Arbeitsanalyse KFZA*)* [21], abridged and adapted by Abele [11]: 14 items, five-point Likert scale, assigned to five scales: *room for manoeuvre* (3 items), *stress* (3), *team co-operation* (2), *qualification opportunities* (3), and *leadership* (3).

*Social Support at Work Questionnaire (*Fragebogen zur sozialen Unterstützung am Arbeitsplatz*)* [22]: 12 items, five-point Likert scale, assigned to the scales *mentoring* (4 items), *positive social relationships* (5), and *negative social relationships at work* (3).

*Effort-Reward Imbalance at Work Questionnaire ERI (*Fragebogen zu beruflichen Gratifikationskrisen*)* [23]: 17 items (five-point Likert scale), assigned to the scales *effort* (6 items) and *reward* (11). The items of the "effort" scale measure an intrinsic (personal, coping-related) component of stressful experience at work, whilst the items of the "reward" scale measure an extrinsic (perceived work situation) component. The effort/reward quotient is a measure of the imbalance between these two components. A value close to zero indicates a favourable condition (relatively low effort, relatively high reward), whereas values above 1.0 indicate a high amount of expended effort not equalled by the rewards received or expected in return.

Over-commitment (6 items) (four-point Likert scale) focuses on an excessive effort at work as evidenced by the respondent's inability to withdraw from work obligations and develop a more distant attitude towards job requirements.

Sociodemographic data

Statistical analyses

Data included in the analyses

In a first step, data of the residents' workplace experiences at T_2 (n = 497) are analysed according to gender, and controlled for age, presence/absence of a partner and workload (issue 1). In a second step, a single three-factorial multivariate model is used to check whether there are differences in workplace experiences based on type of training hospital and clinical field (issue 2). In order to yield an adequate number of subjects in each cell, the training institutions are grouped into type "A" and type "B"/"C"/"D" hospitals. Since the subjects working in other training institutions such as research and industry were too heterogeneous and small in number for statistical analysis, these data were excluded. Because of the small number of physicians working in areas such as high-technology fields, psychiatry or paediatrics, only residents of the two main specialities "surgical field" and "internal medicine" (n = 353: 203 females [57.5%], 150 males [42.5%]) are included in the analyses of the second issue. The number of subjects in the eight cells of the $2 \times 2 \times 2$ design are as follows (F = females, M = males, A = "A" hospitals, B = "B"/"C"/"D" hospitals, S = surgical field, I = internal medicine): FAS = 35, FAI = 21, FBS = 99, FBI = 48, MAS = 36, MAI = 13, MBS = 60, MBI = 41.

Statistical methods

All analyses are performed with SPSS for Windows, Release 12.0. Descriptive statistics are given in terms of means and confidence intervals. To investigate the objectives, one-factorial and three-factorial multivariate analyses of covariance (MANCOVA), respectively, are carried out. Independent variables are gender on the one hand, and type of training hospital, clinical field, and gender on the other. Dependent variables are workplace conditions, social support at work, effort-reward imbalance, and over-commitment, and covariates are age, presence/absence of a partner, and workload. Model residuals are normally distributed. To estimate the influence of main effects, interactions, and covariates, Wilks' Lambda and partial eta squared are used.

Results

Gender-related workplace experiences

After 12–15 months of residency, the participants were asked to assess their experiences at work in the hospital. Mean scores and standard error of means (SE) of the scales for female and male physicians and results of multivariate analyses are given in table 2.

There are significant gender-related differences in workplace experiences with regard to less mentoring but more positive social relationships at work, and higher over-commitment scores, between female physicians and their male colleagues. In the total study sample (n = 497), the ratio of effort and reward did not differ according to gender. The mean scores were below 1, indicating that the majority of junior physicians did not in general ex-

Table 2a

Gender-related means and $Delta_{crit}$ (standard error of means (SE) × 1.96) of workplace experience scales (Workplace Conditions short questionnaire, Social Support at Work questionnaire, Effort-reward imbalance, Over-commitment) and results of multivariate analyses of covariance (covariates: age, presence/absence of partner, workload), n = 497.

Workplace experiences Dimensions and scales	females (n = 272) Mean ± SE × 1.96[1]	males (n = 225) Mean ± SE × 1.96[1]
Workplace conditions		
Room for manoeuvre	2.86 ± 0.10	2.80 ± 0.12
Stress (reverse)	2.48 ± 0.10	2.37 ± 0.10
Team co-operation	4.03 ± 0.10	3.88 ± 0.12
Qualification opportunities	3.55 ± 0.10	3.65 ± 0.10
Leadership	3.41 ± 0.10	3.34 ± 0.12
Social support at work		
Mentoring	2.54 ± 0.10	2.75 ± 0.12
Positive social relationships	3.92 ± 0.10	3.64 ± 0.10
Negative social relationships (reverse)	1.62 ± 0.08	1.66 ± 0.08
Effort-reward imbalance	0.78 ± 0.02	0.81 ± 0.04
Over-commitment	2.33 ± 0.08	2.15 ± 0.08

[1] estimation for CI (95%)

Table 2b

Multivariate analyses of covariance.

Workplace conditions

Effect	Wilks'∧	F(5,488)	P	Partial eta²
Gender	0.99	1.23	0.29	0.01
Covariates				
Age	0.98	1.47	0.20	0.02
Presence/absence of partner	0.99	0.81	0.54	<0.01
Workload	0.84	18.9	<0.001	0.16

Table 2c

Social support at work.

Effect	Wilks'∧	F(3,492)	P	Partial eta²
Gender	0.92	13.73	<0.001	0.08
Covariates				
Age	0.99	0.85	0.47	<0.01
Presence/absence of partner	0.99	1.29	0.28	<0.01
Workload	0.98	2.98	0.03	0.02

Table 2d

Effort-reward imbalance.

Effect	F(1,494)	P	Partial eta²
Gender	0.64	0.43	<0.01
Covariates			
Age	0.47	0.49	<0.01
Presence/absence of part3ner	0.06	0.81	<0.01
Workload	60.04	<0.001	0.11

Table 2e

Over-commitment.

Effect	F(1,494)	P	Partial eta²
Gender	17.92	<0.001	0.04
Covariates			
Age	0.06	0.81	<0.01
Presence/absence of partner	<0.01	0.98	<0.01
Workload	29.35	<0.001	0.06

perience an imbalance of effort and reward; however, 40 females and 41 males had an ERI quotient above 1 (unfavourable and posing a health risk).

The covariates of age and presence/absence of a partner do not significantly influence the four dimensions of the workplace experiences. Workload, however, has a significant impact, being positively correlated with stress at work (r = 0.40, p <0.001), effort-reward imbalance (r = 0.33, p <0.001), and over-commitment (r = 0.22, p <0.001), and negatively correlated with room for manoeuvre (r = 0.21, p <0.001). Workload accounts for 16% of the variance of the workplace conditions, 11% of the effort-reward imbalance, and 6% of the over-commitment.

Career and mentor

Of the 272 females (100%) and 225 males (100%), 84 female (30.9%) and 101 male physicians (44.9%) aspire to a *hospital* or *academic career* (p = 0.001). Only 36 (42.9%) of the women pursuing such a career reported having a *personal mentor*, as compared to 60 (59.4%) of the male residents (p = 0.018).

Workplace experiences with regard to type of training hospital, clinical field, and gender

Table 3 presents the results of the three-factorial multivariate model concerning the four dimensions of the workplace experiences.

For the rating of *workplace conditions*, type of training hospital and clinical field are significant, while gender is not. Type "A" hospitals and "surgical fields" are rated worse. Of the three covariates, only workload has a significant influence; the higher the workload, the worse the perceived workplace conditions.

Social support at work: Type of training hospital, clinical field, and gender exert an influence. Type-"A" hospital residents receive more mentoring, but perceive social relationships at work as being less positive. Subjects in surgical fields of both hospital categories also rate social relationships as less positive. Females receive less mentor-

Table 3a

Means and $Delta_{crit}$ (standard error of means (SE) × 1.96) of workplace experience scales (Workplace Conditions short questionnaire, Social Support at Work questionnaire, Effort-reward imbalance, Over-commitment) related to type of training hospital ("A"- versus "B"/"C"/"D"-hospitals), clinical field (surgical versus internal field) and gender, and results of multivariate analyses of covariance (covariates: age, presence or absence of partner, workload), n = 353.

Workplace experiences Dimensions and scales	residents in training hospitals		residents in clinical fields		gender	
	"A" (n = 105) Mean ± SE × 1.96[1]	"B"/"C"/"D" (n = 248) Mean ± SE × 1.96[1]	surgical (n = 230) Mean ± SE × 1.96[1]	internal (n = 123) Mean ± SE × 1.96[1]	females (n = 203) Mean ± SE × 1.96[1]	males (n = 203) Mean ± SE × 1.96[1]
Workplace conditions						
Room for manoeuvre	2.65 ± 0.16	2.84 ± 0.10	2.72 ± 0.10	2.88 ± 0.16	2.87 ± 0.10	2.66 ± 0.14
Stress (reverse)	2.18 ± 0.16	2.47 ± 0.10	2.40 ± 0.12	2.34 ± 0.14	2.42 ± 0.12	2.34 ± 0.12
Team co-operation	3.74 ± 0.16	4.06 ± 0.10	3.93 ± 0.10	4.04 ± 0.16	4.03 ± 0.12	3.88 ± 0.14
Qualification opportunities	3.76 ± 0.14	3.41 ± 0.10	3.43 ± 0.10	3.67 ± 0.14	3.51 ± 0.10	3.52 ± 0.12
Leadership	3.23 ± 0.16	3.36 ± 0.12	3.20 ± 0.12	3.56 ± 0.16	3.39 ± 0.12	3.23 ± 0.14
Social support at work						
Mentoring	2.73 ± 0.18	2.51 ± 0.10	2.54 ± 0.12	2.65 ± 0.16	2.53 ± 0.12	2.64 ± 0.14
Positive social relationships	3.61 ± 0.14	3.88 ± 0.10	3.77 ± 0.10	3.86 ± 0.14	3.95 ± 0.12	3.59 ± 0.12
Negative social relationships (reverse)	4.33 ± 0.14	4.38 ± 0.08	4.30 ± 0.08	4.47 ± 0.10	4.39 ± 0.08	4.33 ± 0.10
Effort-reward imbalance	0.89 ± 0.04	0.79 ± 0.02	0.84 ± 0.04	0.79 ± 0.04	0.80 ± 0.04	0.85 ± 0.04
Over-commitment	2.32 ± 0.12	2.23 ± 0.08	2.25 ± 0.08	2.26 ± 0.10	2.34 ± 0.08	2.15 ± 0.08

[1] estimation for CI (95%)

Table 3b

Multivariate analyses of covariance.

Workplace conditions

Effect	Wilks' Λ	F(5,338)	p	Partial eta²
Training hospital	0.88	9.52	<0.001	0.12
Clinical field	0.92	5.84	<0.001	0.08
Gender	0.99	0.86	0.51	0.01
Training hospital × Clinical field	0.97	2.04	0.07	0.03
Training hospital × Gender	0.98	1.38	0.23	0.02
Clinical field × Gender	0.99	0.25	0.94	<0.01
Training hospital × Clinical field × Gender	0.98	1.17	0.32	0.02
Covariates				
Age	0.98	1.31	0.26	0.02
Presence/absence of partner	0.98	1.30	0.26	0.02
Workload	0.86	11.45	<0.001	0.15

Table 3c

Social support at work.

Effect	Wilks' Λ	F(3,340)	p	Partial eta²
Training hospital	0.91	11.50	<0.001	0.09
Clinical field	0.97	3.46	0.02	0.03
Gender	0.91	11.52	<0.001	0.09
Training hospital × Clinical field	0.97	3.86	0.01	0.03
Training hospital × Gender	0.96	4.61	<0.01	0.04
Clinical field × Gender	0.99	0.08	0.97	<0.01
Training hospital × Clinical field × Gender	0.99	0.51	0.67	<0.01
Covariates				
Age	0.99	0.43	0.73	<0.01
Presence/absence of partner	0.98	2.64	0.05	0.02
Workload	0.99	1.56	0.20	0.01

ing, but report more positive social relationships.

There are two *significant interactions*: Firstly, males working in "A" hospitals receive more mentoring than females. In "B"/"C"/"D" hospitals, there is no gender difference. Secondly, mentoring experiences in "A" hospitals are significantly worse in "surgical fields" than in "internal medicine", independent of gender. In "B"/"C"/"D" hospitals there is no difference in mentoring depending on clinical field.

The *effort-reward imbalance* is rated significantly higher in "A" hospitals than in "B"/"C"/"D"

Table 3d
Effort-reward imbalance.

Effect	F(1,342)	p	Partial eta²
Training hospital	5.91	0.02	0.02
Clinical field	1.62	0.20	<0.01
Gender	0.70	0.40	<0.01
Training hospital × Clinical field	1.18	0.28	<0.01
Training hospital × Gender	0.94	0.33	<0.01
Clinical field × Gender	0.48	0.49	<0.01
Training hospital × Clinical field × Gender	0.02	0.90	<0.01
Covariates			
Age	0.16	0.69	<0.01
Presence/absence of partner	<0.01	0.97	<0.01
Workload	17.59	<0.001	0.05

Table 3e
Over-commitment.

Effect	F(1,342)	p	Partial eta²
Training hospital	1.40	0.24	<0.01
Clinical field	0.66	0.42	<0.01
Gender	8.54	<0.01	0.03
Training hospital × Clinical field	0.02	0.88	<0.01
Training hospital × Gender	0.02	0.90	<0.01
Clinical field × Gender	0.61	0.44	<0.01
Training hospital × Clinical field × Gender	1.02	0.31	<0.01
Covariates			
Age	0.62	0.43	<0.01
Presence/absence of partner	0.75	0.39	<0.01
Workload	13.44	<0.001	0.04

hospitals. There are no significant differences between the two clinical fields and between male and female residents.

As described above, female physicians report significantly higher *over-commitment*. There is no difference between the two groups of training hospitals or for the clinical fields.

The covariates age and presence/absence of a partner do not have an impact, unlike *workload*, which plays an important role in workplace conditions, effort-reward imbalance, and over-commitment.

Effort-reward imbalance: residents at risk

In the sub-sample analysed in the three-factorial multivariate model (n = 353), an effort-reward imbalance (ERI >1) was seen in 34 females and 35 males (p = 0.080), in 28 residents of type "A" and in 41 residents of type "B"/"C"/"D" hospitals (p = 0.022), as well as in 51 physicians working in "surgical fields" and 18 subjects working in "internal medicine" (p = 0.057).

Discussion

The data presented in this paper were gathered from the second assessment of the Swiss physicians' career development study [12]. Out of all registered medical students of the three medical schools of the German-speaking part of Switzerland (n = 1004), about 50% participated in both study waves – a high participation rate, compared with other cohort studies in this field. In the first wave of the prospective study, respondents were still attending medical school. In the second wave, they had embarked on postgraduate medical training. The aim of this part of the study was to analyse the influence of gender, type of training hospital, and clinical field on the first-year residents' workplace experiences: factors which we assume to have a relevant influence on the physicians' further career development.

Gender-related workplace experiences

We found few, but relevant, gender-related differences in *workplace experiences*. Female residents received less *mentoring*, which we assume will be disadvantageous for their further careers. It is well known that mentoring is an important key to professional success and personal growth, especially for women [24]. A literature overview on mentoring programs [25] revealed that mentoring is not as well established in Europe as in the United

States. An integrated mentoring program for junior physicians has been in place in our group at the University Hospital Zurich since 2002 [26]; three quarters of the participants are female residents.

Female physicians experienced significantly more *positive social relationships* at work. Zivanovic [27] reported that female residents were given more positive feedback from patients, nursing staff, and senior physicians, but male residents were given more career support, ie, men received more purposeful support such as mentoring, while the support women received was relatively unfocused.

In the *over-commitment* scale, female junior physicians scored significantly higher than their male colleagues. In an as-yet unpublished study of graduates of seven German medical schools now working as physicians, J. Siegrist (personal communication, 2004) found similar means for the over-commitment scale as well as the same significant gender-related difference. Because of gender stereotypes, female physicians still feel compelled to prove that they are as bright, successful, and career-oriented, ie, as driven by high intrinsic career motivation, as their male counterparts. This might contribute to the female doctors' tendency towards over-commitment.

Residents of both genders assessed *low room for manoeuvre* and *high stress at work*. According to the stress model of Karasek & Theorell [19] these conditions are risk factors for developing physical and psychological symptoms. Other authors report on residents' views of their working life [18, 28]. Several causes for their unhappiness were presented, the most common of which were being overworked, feeling stressed, and feeling inadequately supported. Another common negative remark concerned a feeling of being under-appreciated by senior physicians. In our study, 16.3% of the residents also reported an unfavourable imbalance of effort expended and rewards received according to the effort-reward imbalance model of J. Siegrist [20].

With regard to gender-related differences in *workplace experiences*, studies published to date show inconsistent results. Some authors (cited in [3]) report that female physicians tend to claim more stress reactions to residency. Time pressure and problems balancing a family and career are major sources of career dissatisfaction in women [29]. In our study, however, only 2.5 percent of the participating women have children of their own, ie, at this point in their speciality training, female and male residents have similar work and social environments. We assume that the residents' workplace experiences will change over time according to gender. It is presumed that in time, more residents will have children, which will entail a greater conflict between professional career and family obligations for women than for men.

Since the *age* of the study participants is fairly homogeneous (mean 29.3, SD 2.4), we did not expect it to have any influence on workplace experiences. Contrary to the findings in the Norwegian cohort study [10], the *presence or absence of a partner* did not exert an influence on the residents' workplace experiences at this stage of our study. According to other studies [17, 18], however, *workload* did have a significant impact.

Workplace experiences and training hospital

Junior physicians of both genders rate their workplace experiences differently, depending on the type of training hospital they work in. Type "A" hospitals such as university hospitals or big cantonal hospitals are ranked worse than "B"/"C"/"D" hospitals with regard to most of the dimensions of the workplace experiences. Which factors account for this? Patients with more-complex diseases requiring more specialised treatment are cared for in "A" hospitals. First-year residents lack the requisite professional skills to assume responsibility for diagnostic and therapeutic procedures for these patients, and must be closely supervised by their senior physicians. Quite often, senior physicians are overburdened with clinical obligations, are engaged in research projects, and want first and foremost to pursue their own careers. Teaching and training residents, however, does not advance their careers. Type "A" hospitals offer more qualification opportunities, which can, however, lead to greater competitiveness. Furthermore, type "A" hospitals are bigger organisational units, which often implies a more impersonal relationship between senior and junior physicians. All of the above factors may contribute to residents working in "A" hospitals not only reporting worse workplace conditions and social support, but also a greater effort-reward imbalance. In general, first-year residents start their professional careers with high commitment and great effort. In return they expect adequate reward. High effort and low reward conditions over an extended period can lead to frustration and depression in the subjects concerned [18, 20, 30].

Workplace experiences and clinical field

Residents working in surgical fields give workplace conditions and social support at work a worse rating than junior physicians working in internal medicine. Our study data cannot explain these results yet. Some of the residents start their postgraduate training in a clinical field other than their chosen speciality (the so-called *Fremdjahr* or "non-speciality year"). In the first year, half of the participants worked in surgical fields. We assume that many of these junior physicians have chosen a surgical field as a *Fremdjahr*. M. Siegrist et al. [13] reported in their study that residents working in their chosen speciality rated workplace conditions as significantly better than those working in a *Fremdjahr*. By the third wave of our study, after three years of postgraduate training, participants will have chosen their speciality. We will then be able to analyse the influence of clinical field on residents' workplace experiences in greater detail.

Workplace experiences and workload

In our study, physicians' workplace experiences are strongly influenced by their workload. The higher the workload, the more stressed the residents feel, the higher their effort-reward imbalance and over-commitment scores are, and the lower their feeling of control over work. Other authors report that the most common negative comments regarding work have to do with the heavy workload [18]. Reasons for residents' heavy workload at the outset of their clinical work could be a mismatch between what the doctors were trained for and what they are required to do [28], and/or a lack of communication skills – not well trained during medical school – which may result in more time being needed to perform clinical work [31]. According to the stress model of Karasek & Theorell [19], a combination of high demands and low control over work owing to limited professional experience increases subjects' risk of developing psychological and psychosomatic symptoms [17, 30] or leaving the profession at an early stage in their careers [32].

Conclusion: the results of our study indicate that institutional determinants are crucial for the workplace experiences and initial career steps of junior physicians. Medical educators, especially in "*A*" hospitals, should become more involved in structured residency programs, and be aware of potential gender inequalities in the career support of female physicians.

Acknowledgement: We would like to thank Steffen Niemann, M.A. for his competent administration of the study participants' addresses.

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