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The impact of burnout and occupational stress on sexual function in both male and female individuals: a cross-sectional study

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Abstract

Burnout and occupational stress are common problems in the modern society. The aim of the study was to investigate the association of burnout and occupational stress with sexual dysfunction. The study enrolled 251 residents, 143 males and 108 females. The personal medical history, demographics, and professional data of the participants were recorded. The Copenhagen Burnout Inventory (CBI) and the job stress measure were used for the evaluation of burnout and occupational stress, correspondingly. The International Index of Erectile Function (IIEF) and the Female Sexual Function Index (FSFI) were used for the assessment of sexual function. The majority of the respondents were males (57%), with a mean age of 31 years. From the analysis concerning males, personal burnout, hypertension, and alcohol consumption correlated independently with erectile dysfunction ($p = 0.001$) and reduced total satisfaction ($p < 0.001$). With respect to the female participants, the number of children was found to be related to easier arousal ($p = 0.009$), better lubrication ($p = 0.006$), and orgasm ($p = 0.016$). Contrariwise, job stress related negatively with lubrication ($p = 0.031$) and orgasm ($p = 0.012$). This is the first study examining the effect of burnout on sexual function. Personal burnout was observed to be associated with sexual dysfunction in men whereas job stress correlated with female sexual problems. Further examination in different occupational groups and a greater number of patients is required.

Introduction

The term "job burnout" was first described in 1974 by health care professionals as a syndrome of emotional and psychological exhaustion [1]. Since then, several models that explain burnout have been proposed [2–5]. According

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to the model of Copenhagen, the latest model proposed, burnout is a psychological condition that consists of three main elements: personal, professional, and client-related exhaustion and can be diagnosed in all types of professions [3, 6]. Occupational stress is another psychological condition that is defined as the anxiety suffered from an individual's profession. Job stress is associated more with external pressure and responsibilities than with a person's abilities and expectations [7].

Psychological problems such as chronic anxiety and depression have been related to sexual dysfunction and erectile dysfunction, respectively [8, 9]. Sexual dysfunctions include a heterogeneous group of disorders characterized by the inability of a person to respond sexually or to experience sexual pleasure [10]. Despite burnout and occupational stress being common psychological conditions, their connection with sexual and erectile dysfunction has not yet been investigated. So far, only one study tries—though partially—to investigate this relation, suggesting a connection between work-related difficulties and sexual difficulties among heterosexual men [11]. Specifically, "Checklist Anxiety (SCL_ANX4)" and "Symptom

Checklist Depression (SCL_DEP6)" were used to measure anxiety, while sexual problems were examined using seven questions previously used in the "British National Study of Sexual Attitudes and Lifestyles (NATSAL) 2000" and difficulties at work were reported using 10 Yes/No questions. However, these tools neither separated anxiety from the anxiety arising from work nor examined burnout as a causative factor. Our study tries to elucidate this relationship using valid and globally used tools. The purpose of this study is to investigate the impact of burnout and occupational stress on sexual performance in both male and female individuals.

Materials and methods

A cross-sectional study was conducted with Greek residents of both sexes who were sexually active. All the participants were working in hospitals both in Greece and abroad, and all specialties were included. The study was conducted from October 2017 until March 2018 and was approved by the appropriate ethics committees of G.H. Papageorgiou and G.H. AHEPA. Data acquisition was performed through online questionnaires with the aid of Google drive. All participants were residents registered in the Greek medical council, and a link was forwarded to them via email. The link automatically connected the participants to a Google questionnaire. Initially, information regarding the aim of the study and reassurance about maintaining the anonymity of the participants were provided. All respondents participated voluntarily, and consent was required for further involvement in the research. From the 350 emails distributed, 282 responded and 251 enrolled in the research. There were no missing data apart from the seven respondents who did not answer the question "number of children?" Exclusion criteria included the following: 1. abstinence from sexual activities, 2. major psychiatric diseases, and 3. recent surgery or treatment that affected sexual function.

All residents answered the questionnaire that consisted of three parts. The first part included questions about age, sex, anthropometric measures, educational level, current position, and family condition. It further included questions regarding alcohol and tobacco consumption and participants' medical history. The presence of diabetes mellitus, hypertension, psychological disorders, and current medication was investigated in detail. The second part included the Copenhagen Burnout Inventory (CBI) and the job stress measure tool and examined the presence of occupational burnout and job stress, respectively. The last part investigated the sexual function of each participant with the use of the full version of the International Index of Erectile Function (IIEF) for men and Female Sexual Function Index

(FSFI) for women. The order of questions in each part was random.

The CBI

The CBI examines burnout and consists of three subscales that focus on different aspects of exhaustion: personal (question 1–6), professional (question 7–13), and patient-related (question 14–19). Personal exhaustion represents the fatigue that one experiences at the end of the day while professional exhaustion reflects the personal and psychological fatigue resulting from work. The last subscale examines burnout originating from interpersonal relationships between personnel and patients. Patients can be substituted by clients, students, social service recipients, elderly citizens, or inmates depending on the profession of the subjects investigated. Thus, the CBI can be applied to different professionals. Additionally, it has been translated and validated in multiple languages including Greek. The total score and the score in each subscale is calculated by the mean score of the items contained [3, 12].

Job stress measure

This particular tool investigates occupational stress. It has been translated and validated in Greek and consists of 16 items. The total score is derived from the sum of the scores of all the items and is transformed in a scale ranging from 20 to 100 [13, 14].

The IIEF

The full version of the IIEF is the golden standard in the assessment of male sexual function. Its Greek version is a valid tool of 15 items that examine sexual function during the last 4 weeks. A total score between 25 to 30 indicates a lack of erectile dysfunction, 19–24 suggests mild erectile dysfunction, 13–18 indicates moderate dysfunction, and below 12 implies severe erectile dysfunction. The widespread acceptance of this tool encourages comparison among different countries and populations [15, 16].

The FSFI

With regard to the female population, the Greek version of the FSFI was adopted for this study. The latter is a valid instrument composed of 19 questions evaluating sexual function over the last 4 weeks. Total score values below 26 (maximum 36) suggest sexual dysfunction [17, 18].

Data were automatically uploaded on Google drive upon the completion of the questionnaire. Following this, scores were calculated according to each tool's instructions. The statistical analysis was performed with IBM Statistical

Table 1 Cronbach's α for CBI, job stress measure, FSFI-Gr, and IIEF

Tools	Scales	Cronbach's α
CBI	Total	0.89
	Personal burnout	0.848
	Work-related burnout	0.753
	Patient-related burnout	0.853
Job stress measure	Total	0.908
FSFI	Total	0.925
	Desire	0.914
	Arousal	0.929
	Lubrication	0.775
	Orgasm	0.855
	Satisfaction	0.903
	Pain	0.915
IIEF	Total	0.882
	Erection	0.88
	Orgasm	0.846
	Desire	0.63
	Satisfaction from contact	0.467
	Total satisfaction	0.876

CBI Copenhagen Burnout Inventory, *FSFI* Female Sexual Function Index, *IIEF* International Index of Erectile Function

Package for Social Sciences (SPSS), version 24 of Windows. Except for descriptive statistics (mean, median, standard deviation—SD, and interquartile range—IQR), the normality of the scales was evaluated by the Kolmogorov–Smirnov test and non-parametric and parametric tests were accordingly selected for further analysis. In detail, the correlation between independent variables and sexual function was examined with the Mann–Whitney and Spearman test. Kruskal–Wallis test was also used for variables with more than two groups and further subgroup analysis was performed with Bonferroni's correction for level of significance. Subsequently, standard multiple regression analysis between job stress measure, CBI, and demographic factors that were statistically significant and IIEF—for men—and FSFI—for women—underlined independent relations. Statistical significance was set at 0.05 with a confidence interval of 95%. For the estimation of each scale's reliability, Cronbach's alpha was calculated (Table 1), suggesting good internal consistency [19].

Results

The final sample included 251 individuals, 143 (57%) men and 108 (43%) women. From those excluded, two respondents had undergone an operation that affected their sexual life, three suffered from psychological diseases, and 26 were not sexually active. The demographics of the respondents such as their medical history and habits were also recorded (Table 2). Since only one participant suffered from diabetes mellitus, this parameter was excluded from further analysis. Furthermore, only male respondents reported hypertension. Therefore, this variable was excluded from further analysis in the female group. In the section "other disease," the majority of the participants mentioned suffering from hypothyroidism under treatment that did not affect sexual function.

The prevalence of burnout and occupational stress were calculated. Only 1.2% of participants suffered from high to very high exhaustion while 24.3% reported "somewhat to high" burnout. Pertaining to job stress, 39.4% of residents reported experiencing mild to moderate stress and 4.4% reported moderate to high occupational stress. Sexual dysfunction was reported in 20% of women with burnout and 24.3% of those without exhaustion. In total, 20.5% of men with burnout reported erectile dysfunction in comparison with 15.9% of those without burnout. The levels of burnout and occupational stress were subsequently analyzed by gender and location of workplace as observed in Table 3. Sexual function was estimated separately for men and women. Among male subjects, 16 out of 143 reported mild erectile dysfunction and 2 respondents suffered from moderate to severe erectile dysfunction. Among the female participants, 25 (23.1%) out of 108 reported sexual dysfunctions. Subgroup analysis per scale of the questionnaires (IIEF, FSFI) was also conducted, as seen in Table 4. Following that bivariate analysis, between sexual function and its scales as dependent variables and all the other factors as independent variables is presented (Tables 5 and 6).

This was followed by standard multiple regression analysis for each sex. IIEF and FSFI were the dependent variables and the CBI subscales and job stress measure were the independent variables. Possible confounding factors such as hypertension and alcohol consumption for men and age, alcohol consumption, number of children, body mass index (BMI), years of residence and type of residence for women were also included. For the male group, personal exhaustion ($p = 0.013$), hypertension ($p = 0.038$), and glasses of alcohol per week ($p = 0.009$) correlated negatively and significantly with erection. Moreover, the number of glasses of alcohol per week ($p < 0.001$) correlated independently and negatively with orgasm. However, none of the factors examined seemed to relate independently with desire. On the other hand, personal burnout related independently and negatively with satisfaction from sexual contact ($p = 0.022$) Finally, personal burnout ($p = 0.032$), hypertension ($p = 0.006$), and glasses of alcohol per week ($p = 0.013$) correlated independently with total satisfaction (Table 7).

Regarding female respondents, social-demographic variables and health status did not correlate significantly with pain, satisfaction, and a total score of FSFI. On the

Table 2 General characteristics of the study population

	Total		Male		Female	
	Number of patients (N)	Percentage of the sample	Number of patients (N)	Percentage of the sample	Number of patients (N)	Percentage of the sample
Participants	251	100	143	57	108	43
Family status						
Single	177	70.5	105	73.4	72	66.7
Married	70	27.9	36	25.2	34	31.5
Divorced	4	1.6	2	1.4	2	1.9
Specialization						
Internal Medicine	126	50.2	61	42.7	65	60.2
Surgical	106	42.2	74	51.7	32	29.6
Laboratory	19	7.6	8	5.6	11	10.2
Complete[a]	210	83.7	118	82.5	92	85.2
Partial[b]	41	16.3	25	17.5	16	14.8
Location of hospital						
Thessaloniki	155	61.8	90	62.9	65	60.2
Greece[c]	86	34.3	47	32.9	39	36.1
Abroad	10	4	6	4.2	4	3.7
Other studies						
None	120	47.8	61	42.7	59	54.6
MSc	77	30.7	53	37.1	24	22.2
PhD	24	9.6	12	8.4	12	11.1
2nd Degree	13	5.2	6	4.2	7	6.5
Post-Graduate education	17	6.8	11	7.7	6	5.6
Smoking						
No	183	72.9	103	72	80	74.1
Yes	68	27.1	40	28	28	25.9
Alcohol consumption						
No	84	33.5	40	28	44	40.7
Yes	167	66.5	103	72	64	59.3
Diabetes mellitus						
No	250	99.6	143	100	107	99.1
Yes	1	0.4	0	0	1	0.9
Hypertension						
No	243	96.8	137	95.8	106	98.1
Yes	8	3.2	6	4.2	2	1.9
Other disease						
No	225	89.6	12	91.6	94	87
Yes	26	10.4	12	8.4	14	13
	Median	**Interquartile range (IQR)**	**Median**	**Interquartile range (IQR)**	**Median**	**Interquartile range (IQR)**
Age	31	29–33	31	28.5–33.5	30	28–32
Number of children	0	0	0	0	0	0–1
Years of residence	3	1.25–4.75	3	2 Apr	3	1.3–4.7
Years in this position	2	1 Mar	2	1 Mar	2	1.1–2.9
BMI	24.3	21.9–26.7	25.9	24–27.8	21.8	20.1–23.5
Packs of cigarettes per day×years	0	0–1	0	0–1	0	0–1
Glasses of alcohol per week	2	0.5–3.5	2	0–4	2	0.5–3.5
Hours of exercise per week	2	0–4	2	0–4	2	0.6–3.4

[a]Educational program that includes all years of residence

[b]Educational program that includes part of the residence

[c]Hospital in Greece apart from Thessaloniki

contrary, female surgeons reported increased desire ($p = 0.02$) that was statistically significant. Furthermore, the number of children correlated positively with arousal ($p = 0.009$). Moreover, job stress ($p = 0.031$) and the number of children ($p = 0.006$) related independently with lubrication. Similarly, occupational stress ($p = 0.012$) and the number of children ($p = 0.016$) correlated independently with orgasm (Table 8).

Table 3 Descriptive results of CBI and job stress measure score (median, IQR)

	CBI score (0–100)		Personal burnout score (0–100)		Work-related score (0–100)		Patient-related score (0–100)		Job stress measure score (20–100)	
Total number of residents	39.47	IQR = 28.29–50.65	45.8	IQR = 33.3–58.3	42.85	IQR = 40.35–43.15	25	IQR = 8.35–41.65	58.75	IQR = 50–67.5
Hospitals in Thessaloniki	38.15	IQR = 26.31–50	45.83	IQR = 31.3–60.3	42.8	IQR = 28.52–59.96	25	IQR = 10.4–39.6	58.75	IQR = 58.75–66.4
Hospitals in Greece	42.1	IQR = 31.41–52.79	50	IQR = 37.5–62.5	46.42	IQR = 33.92–58.92	31.2	IQR = 16.6–45.7	58.75	IQR = 51.1–66.4
Hospitals abroad	42.76	IQR = 33.06–52.46	52	IQR = 38.5–65.5	48.21	IQR = 35.2–61.2	25	IQR = 5.5–44.5	62.5	IQR = 55.3–69.7
Male residents	39.47	IQR = 29.6–49.34	45.83	IQR = 31.2–60.4	42.8	IQR = 31.3–55.3	29.16	IQR = 10.46–47.91	58.75	IQR = 50–67.5
Female residents	40.78	IQR = 27.9–53.6	50	IQR = 40.4–59.6	44.6	IQR = 29–60.2	25	IQR = 8.85–41.15	60	IQR = 58.9–71.1

CBI Copenhagen Burnout Inventory, *score range*

Discussion

In our study, burnout and occupational stress were respectively observed to affect male and female respondents' sexual life. Among the male subjects, the prominent finding was that personal burnout is an independent risk factor for erectile dysfunction, reduced satisfaction from contact and overall satisfaction. Additional factors that had a negative impact on male sexual function were hypertension and alcohol consumption (in glasses per week). In detail, increased weekly intake of alcohol correlated independently and significantly with erectile dysfunction, reduced orgasms and lower total satisfaction. Hypertension was also associated with erectile dysfunction and diminished overall satisfaction. In the opposite gender, occupational stress was an independent risk factor for reduced orgasm and lubrication. In female respondents, however, a higher number of children related positively with arousal, lubrication, and orgasm. Furthermore, those working in the surgical field scored higher in the desire section.

Multiple factors were considered for analysis as covariates (age, parity, DM, hypertension and BMI as constituents of metabolic syndrome, type of residence, medication, resent operation and psychological disorders). Our sample consisted, in general, healthy young individuals of high educational level, one-fourth of whom experience high levels of burnout and 40% of whom reported moderate occupational stress. The variables mentioned above were contained in our analysis. Personal burnout is highlighted as an independent risk factor for erectile dysfunction, reduced satisfaction from contact, and reduced total satisfaction. Simultaneously, in female respondents, work stress worsened both lubrication and orgasm. Additionally, desire was not influenced by any variable in men and in women; satisfaction, pain, and total satisfaction were not related independently with any factor. Impressively, in female residents, the presence of off-springs was positively related to arousal, lubrication, and orgasm. This could be explained by the presence of a long-standing stable relationship between the couple that provides emotional intimacy, thereby promoting female arousal and permitting timed intercourse. Surgical residence, astonishingly, related with increased desire in women. A possible explanation is the indigenous personality traits of those women who apply for surgical residence or variations in timetable not recorded in our study that influence personal life.

Our results concerning male sexual health dysfunction are in accordance with modern bibliography. Specifically, our deduction about hypertension and alcohol consumption are recognized risk factors for erectile dysfunction incorporated in European Urology Guidelines [20]. Nonetheless, the literature review located no study investigating burnout and professional stress in relation to a person's sexuality

Table 4 Descriptive results of IIEF and FSFI

IIEF	Erection (1–30)	Orgasm (0–10)	Desire (2–10)	Satisfaction from contact (0–15)	Total satisfaction (2–10)		
Median	29	10	9	12	8		
Interquartile range (IQR)	27–31	9.5–10	8.5–9.5	10.5–13.5	6.5–9.5		
FSFI	Desire (1.2–6)	Arousal (0–6)	Lubrication (0–6)	Orgasm (0–6)	Satisfaction (0–6)	Pain (0–6)	Total score (1.2–36)
Median	4.8	4.8	5.4	5.2	5.2	6	30.15
Interquartile range (IQR)	4.2–5.4	4.2–5.4	4.8–6	4.6–5.8	4.2–6	5.5–6	27.2–33.1

FSFI Female Sexual Function Index, *IIEF* International Index of Erectile Function

using valid, well-used tools. As previously described, one study examining the impact of work difficulties on sexuality in men reported some relations without examining participants' burnout or occupational anxiety [11]. It is suggested that when anxiety is chronic, it can interfere with sexual function through sustained inflammation, endothelial dysfunction, and the metabolic syndrome [8, 21]. In detail, stressors promote the production of cortisol releasing hormones (CRH), which increases cortisol levels, thereby resulting in reduced LH and testosterone levels. Consequently, decreased testosterone affects libido and subsequently disturb the sexual life of the patients [8].

Psychological disorders such as depression and anxiety have been associated with erectile dysfunction [22–24]. Two studies attempt to elucidate this relationship with a Greek population as the sample. The first study that was conducted among 60 students proposed that interventions for stress management ameliorate satisfaction from sexual life. However, the second research that included patients with newly diagnosed erectile dysfunction did not observe further improvement in sexual function between those who were prescribed tadalafil and those who were additionally participating in a stress management program [25]. Contrarily, in our study job, stress was associated with decreased scores in lubrication and orgasm for female participants, thereby suggesting that occupational stress influences sexuality. It should be noted, however, that participants with major psychiatric disorders such as depression and anxiety or those under medication for similar problems were excluded.

Our study tries to investigate the impact of burnout and job stress on sexual function. To our knowledge, this is the first study that attempts to investigate the vague effects of this factor on sexuality. Our sample consisted of medical residents who traditionally report burnout and anxiety related to their working environment. Moreover, the participants were younger and had stable relationships without other comorbidities or major disorders that harm sexual health, and thereby enhance the robustness of our findings.

There was also a stratification concerning sex, type of specialty, and levels of burnout and occupational stress permitting an in-depth analysis of our scientific question. To our days, the pathophysiology of sexuality remains obscure and our study provides new insights into the comprehension and management of sexual dysfunction.

There are, however, some limitations to our research that should be mentioned. First, a cross-sectional study is not able to draw causal conclusions. Additionally, despite the sample size being stratified, it could be greater and increase the power of the study and further allowing the generalization of our results. Nevertheless, the present findings constitute the rationale for further research on the importance of burnout and occupational stress on sexual dysfunction. Despite anonymity, bias in responses due to embarrassment and recall bias in medication is another possible drawback. Furthermore, a timetable for residence was considered fixed despite personal variations and extracurricular activities that increase exhaustion. Another source of bias is that respondents who are extremely burnt out and busy are less likely to respond than those with more energy and time to fill out all the questionnaires. Moreover, the quality of relationship between the couple was not examined and respondents were questioned individually, thereby hindering further interpretation of the variance of results in women with children. The absence of questionnaires documenting levels of depression is another disadvantage partially confronted by excluding those with major psychiatric disorders and under medication. Finally, an exploration of our findings in different professional groups and people of various socio-economic background is obligatory on account of the multifactorial pathogenicity of sexual dysfunction.

In conclusion, the effect of burnout and job stress on sexual function was examined in both male and female residents. In our study, personal burnout was recorded to be an independent risk factor for deteriorated erection, reduced satisfaction from contact and overall satisfaction in men. In women, professional stress was observed to be

Table 5 Bivariate analysis between social-demographic variable, health status, CBI, Job Stress and IIEF's scales

(rho/p)	IIEF					Statistical test
	Erection	Orgasm	Desire	Satisfaction from contact	Total satisfaction	
Social-demographic variables and health status						
Age	rho = −0.22 (p = 0.793)	rho = 0.11 (p = 0.19)	rho = 0.023 (p = 0.786)	rho = −0.017 (p = 0.837)	rho = −0.017 (p = 839)	Spearman's (rho & p values)
BMI	rho = 0.016 (p = 0.853)	rho = 0.063 (p = 0.456)	rho = −0.007 (p = 0.932)	rho = 0.096 (p = 0.256)	rho = −0.017 (p = 0.839)	
Number of children	rho = 0.041 (p = 0.627)	rho = 0.106 (p = 0.211)	rho = 0.044 (p = 0.609)	rho = −0.028 (p = 0.744)	rho = 0.016 (p = 0.855)	
Years in residence	rho = 0.042 (p = 0.621)	rho = 0.055 (p = 0.517)	rho = −0.007 (p = 0.931)	rho = 0.096 (p = 0.252)	rho = 0.155 (p = 0.064)	
Years in the same position	rho = 0.058 (p = 0.493)	rho = −0.3 (p = 0.719)	rho = 0.064 (p = 0.446)	rho = 0.073 (p = 0.387)	rho = 0.154 (p = 0.066)	
Packs of cigarettes per day[a] years	rho = −0.107 (p = 0.202)	rho = −0.053 (p = 0.508)	rho = 0.000 (p = 0.998)	rho = 0.064 (p = 0.441)	(p = 0.864) rho = 0.016	
Glasses of alcohol per week	rho = −0.19 (p = 0.023)	rho = −0.284 (p = 0.001)	rho = −0.075 (p = 0.373)	rho = −0.104 (p = 0.217)	rho = −0.18 (p = 0.031)	
Hours of exercise per week	rho = −0.03 (p = 0.722)	rho = −0.092 (p = 0.272)	rho = 0.05 (p = 557)	rho = 0.065 (p = 0.442)	rho = 0.088 (p = 0.295)	
Specialty (complete–partial)	0.85	0.657	0.069	0.483	0.339	Mann–Whitney (p values)
Smoking	0.21	0.673	0.621	0.43	0.989	
Alcohol	0,021[b]	0.036[a]	0.135	0.3	0.265	
Hypertension	0.276	0.498	0.084	0.091	0,016[c]	
Specialty	0.907	0.507	0.445	0.328	0.455	Kruskal–Wallis (p values)
Other education	0.384	0.5	0.409	0.689	0.587	
Location of hospital	0.971	0.52	0.823	0.697	0.864	
Family status	0.575	0.39	0.127	0.619	0.274	
CBI						
Personal burnout	rho = −0.116 (p = 0.166)	rho = −0.094 (p = 0.264)	rho = −0.258 (p = 0.002)	rho = −0.333 (p < 0.001)	rho = −0.334 (p < 0.001)	Spearman's (rho & p values)
Work-related burnout	rho = −0.067 (p = 0.426)	rho = −0.042 (p = 0.621)	rho = −0.249 (p = 0.003)	rho = −0.305 (p < 0.001)	rho = −0.294 (p < 0.001)	
Patient-related burnout	rho = −0.124 (p = 0.139)	rho = −0.079 (p = 0.348)	rho = −0.016 (p = 0.849)	rho = −0.197 (p = 0.019)	rho = −0.203 (p = 0.015)	
Total score	rho = −0.109 (p = 0.196)	rho = −0.092 (p = 0.276)	rho = −0.192 (p = 0.022)	rho = −0.338 (p < 0.001)	rho = −0.339 (p < 0.001)	
Job stress measure						
	rho = −0.117 (p = 0.165)	rho = −0.018 (p = 0.83)	rho = −0.185 (p = 0.027)	rho = −0.226 (p = 0.007)	rho = −0.238 (p = 0.004)	

CBI Copenhagen Burnout Inventory, IIEF International Index of Erectile Function

[a] Alcohol consumption: no: mdn 10, IQR (0), ean rank (81, 73); yes: mdn 10, IQR (9–11), mean rank (68, 22)

[b] Hypertension: no: mdn 29, IQR (27–31); yes: mdn 25.5, IQR (22.13–28.87)

[c] Hypertensio: no: mdn 8, IQR (6.5–9.5); yes: mdn 5.5, IQR (3.5–7.5)

Table 6 Bivariate analysis between social-demographic variable, health status, CBI, job stress, and FSFI's scales

(p/r)	FSFI Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total score	Statistical test
Social-demographic variables and health status								
Age	rho = −0.19 (p = 0.842)	rho = 0.154 (p = 0.112)	rho = 0.223 (p = 0.02)	rho = 0.178 (p = 0.066)	rho = 0.008 (p = 0.937)	rho = 0.077 (p = 0.427)	rho = 0.113 (p = 0.245)	Spearman's (rho & p values)
BMI	rho = 0.101 (p = 0.3)	rho = −0.202 (p = 0.036)	rho = 0.078 (p = 0.42)	rho = −0.128 (p = 0.185)	rho = −0.12 (p = 0.217)	rho = −0.024 (p = 0.807)	rho = −0.097 (p = 0.318)	
Number of children	rho = −0.272 (p = 0.005)	rho = 0.203 (p = 0.039)	rho = 0.277 (p = 0.004)	rho = 0.253 (p = 0.009)	rho = 0.135 (p = 0.173)	rho = 0.154 (p = 0.118)	rho = 0.091 (p = 0.359)	
Years of residence	rho = 0.101 (p = 0.298)	rho = 0.211 (p = 0.028)	rho = 0.183 (p = 0.057)	rho = 0.078 (p = 0.423)	(p = 0.996) rho = 0.000	rho = −0.035 (p = 0.718)	rho = 0.113 (p = 0.244)	
Yeas in the same position	rho = −0.067 (p = 0.493)	rho = 0.051 (p = 0.603)	rho = 0.001 (p = 0.996)	rho = 0.02 (p = 0.835)	rho = 0.004 (p = 0.97)	rho = −0.034 (p = 0.728)	rho = 0.005 (p = 0.961)	
Packs of cigarettes per day[a] years	rho = −0.054 (p = 0.581)	rho = −0.039 (p = 0.69)	rho = 0.005 (p = 0.961)	rho = −0.109 (p = 0.262)	rho = 0.014 (p = 0.888)	rho = 0.04 (p = 0.682)	rho = −0.016 (p = 0.869)	
Glasses of alcohol/week	rho = 0.235 (p = 0.014)	rho = 0.006 (p = 0.952)	rho = −0.026 (p = 0.786)	rho = −0.136 (p = 0.16)	rho = −0.02 (p = 0.835)	rho = 0.085 (p = 0.381)	rho = 0.052 (p = 0.594)	
Hours of exercise /week	rho = 0.292 (p = 0.002)	rho = 0.068 (p = 0.484)	rho = −0.014 (p = 0.886)	rho = −0.031 (p = 0.751)	rho = −0.012 (p = 0.9)	rho = −0.02 (p = 0.833)	rho = 0.113 (p = 0.234)	
Smoking	0.555	0.672	0.986	0.228	0.829	0.709	0.858	Mann–Whitney (p values)
Alcohol	0.004[a]	0.599	0.416	0.127	0.635	0.468	0.783	
Specialty (complete–partial)	0.534	0.056	0.611	0.11	0.189	0.551	0.05	
Specialty	0.01[b]	0.272	0.107	0.169	0.732	0.736	0.176	Kruskall– Wallis (p values)
Other education	0.855	0.206	0.108	0.764	0.182	0.755	0.175	
Hospital's location	0.783	0.568	0.276	0.899	0.918	0.525	0.712	
Family status	0.236	0.401	0.163	0.215	0.569	0.474	0.718	
CBI								
Personal burnout	rho = −0.172 (p = 0.074)	rho = −0.088 (p = 0.365)	rho = −0.025 (p = 0.797)	rho = 0.049 (p = 0.617)	rho = 0.045 (p = 0.647)	rho = −0.035 (p = 0.718)	rho = −0.057 (p = 0.555)	Spearman's (rho & p values)
Work-related	rho = −0.045 (p = 0.642)	rho = −0.053 (p = 0.583)	rho = −0.056 (p = 0.565)	rho = 0.001 (p = 0.996)	rho = 0.032 (p = 0.743)	rho = 0.077 (p = 0.43)	rho = 0.004 (p = 0.966)	
Patient-related	rho = −0.153 (p = 0.114)	rho = −0.139 (p = 0.151)	rho = −0.022 (p = 0.818)	rho = 0.02 (p = 0.841)	rho = −0.074 (p = 0.449)	rho = 0.116 (p = 0.231)	rho = −0.031 (p = 0.751)	
Total score	rho = −0.139 (p = 0.152)	rho = −0.113 (p = 0.24)	rho = −0.045 (p = 0.641)	rho = 0.019 (p = 0.844)	rho = 0.018 (p = 0.849)	rho = 0.071 (p = 0.466)	rho = −0.029 (p = 0.765)	
Job stress measure								
rho = −0.177 (p = 0.066)	rho = −0.197 (p = 0.041)	rho = −0.167 (p = 0.084)	rho = −0.141 (p = 0.146)	rho = −0.22 (p = 0.819)	rho = 0.16 (p = 0.871)	rho = −0.0132 (p = 0.172)		

CBI Copenhagen Burnout Inventory, *FSFI* Female Sexual Function Index

[a]Alcohol consumption: yes: Mdn 4.2, IQR (3–5.4); no: Mdn 3.6, IQR (2.4–4.8)

[b]Mean rank in internal medicine: 48.95, surgical: 68.3, laboratory: 47.18

Table 7 Multivariate analysis between IIEF subscales and CBI scales, Job stress measure, and social-demographic variables

P values	Erection	Orgasm	Desire	Satisfaction for contact	Total satisfaction
Personal related burnout	0.013 (Beta = −0.301, B = −0.052)	0.062	0.13	0.022 (Beta = −0.27, B = −0.033)	0.032 (Beta = −0.247, B = −0.24)
Work-related burnout	0.267	0.307	0.228	0.489	0.719
Patient-related burnout	0.525	0.476	0.179	0.169	0.465
Job stress	0.77	0.8	0.461	0.971	0.478
Glasses of alcohol/week	0.009 (Beta = −0.212, B = −0.233)	<0,001 (Beta = −0.413, B = −0.18)	0.902	0.106	0.013 (Beta = −0.192, B = −0.119)
Hypertension	0.038 (Beta = −0.169, B = −3.031)	0.935	0.114	0.191	0.006 (Beta = −0.215, B = −2.182)
Adjusted R^2	0.107	0.163	0.092	0.149	0.186
Model significance (p)	0.001	<0.001	0.004	<0.001	<0.001

Table 8 Multivariate analysis between FSFI subscales and CBI scales, job stress measure, and social-demographic variables

P values	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total
Personal related burnout	0.092	0.58	0.669	0.511	0.56	0.137	0.701
Work-related burnout	0.126	0.424	0.545	0.598	0.863	0.526	0.365
Patient-related burnout	0.361	0.388	0.477	0.655	0.61	0.73	0.659
Job stress	0.82	0.082	0.031 (Beta = −293, B = −0.017)	0.012 (Beta = −0.347, B = −0.025)	0.69	0.489	0.182
Glasses of alcohol/week	0.21	–	–	–	–	–	–
Hours of exercise/week	0.065	–	–	–	–	–	–
Number of children	0.143	0.018 (Beta = 0.23, B = 0.366)	0.006 (Beta = 0.293, B = 0.419)	0.016 (Beta = 235, B = 427)	–	–	–
Internal medicine	0.353	–	–	–	–	–	–
Surgical residence	0.034 (Beta = 0.383, B = 0,853)	–	–	–	–	–	–
BMI	–	0.47	–	–	–	–	–
Years of residence	–	0.125	–	–	–	–	–
Age	–	–	0.995	–	–	–	–
Adjusted R^2	0.162	0.094	0.086	0.068	−0.031	−0.014	−0.004
Model significance (p)	0.002	0.02	0.022	0.036	0.936	0.648	0.476

an independent risk factor for reduced orgasm and lubrication. Our findings highlight the impact of workload on doctors' sexuality. Since burnout and job stress are psychological syndromes, a psychological influence of occupation on sexual life for both sexes is suggested. However, the exact interaction between professional life and sexuality remains obscure and further studies in a greater population and different professions are a necessity. Health care practitioners are also encouraged to delve deeper into patients' social and professional difficulties when addressing patients with sexual problems.

Compliance with ethical standards

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