

Survey on Recent Suicidal Ideation Among Female University Hospital Physicians in Sweden and Italy (The HOUPE Study): Cross-Sectional Associations With Work Stressors

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ABSTRACT

Background: Suicide rates among physicians are higher than in the general population, and rates among female physicians are particularly high. More female than male physicians report suicidal thoughts, with suicidal ideation being a well-recognized precursor of suicide. The urgent need to find the reasons for suicide risk in female physicians is underscored by society's increasing dependence on this group of health care providers.

Objective: The aim of this paper was to identify potential risk and protective factors associated with recent suicidal ideation in female physicians.

Methods: A cross-sectional survey analysis of work-related health, organizational culture, career paths, and working conditions was performed among permanently employed female physicians from the HOUPE (Health and Organisation among University Physicians in four European countries) study: 385 in Sweden and 126 in Italy. The main outcome measure was recent (within the prior 12 months) suicidal thoughts.

Results: Overall, 13.7% and 14.3% of the participants from Sweden and Italy, respectively, reported suicidal thoughts within the prior 12 months. Among the physicians from Sweden, the most powerful multivariate model for such thoughts included 2 independent variables related to work: degrading experiences/harassment at work (odds ratio [OR], 3.03; 95% CI, 1.48–6.23), and work meetings to discuss stressful situations (OR, 0.36; 95% CI, 0.19–0.69). The model included self-diagnosis and self-treatment as a significant factor. Work meetings to discuss stressful situations were also in the multivariate model for the Italian physicians (OR, 0.21; 95% CI, 0.05–0.86), together with being given work assignments without adequate resources (OR, 5.0; 95% CI, 1.32–18.8). Significant non-work-related factors in the Italian model were younger age and seeking professional help for depression or burnout.

Conclusions: In both Sweden and Italy, work stressors have been identified that may increase the risk for suicide for female physicians. A potential protective factor was meetings to discuss stressful work experiences. These findings suggest that such meetings should be more broadly implemented. (*Gen Med.* 2009;6:314–328) © 2009 Excerpta Medica Inc.

Key words: physicians, gender, suicide risk, academic medicine, harassment, work organization.

INTRODUCTION

Increasing attention is being given to various aspects of mental health among female physicians, especially personality and behavioral patterns of individual physicians. We take a complementary approach by exploring potentially contributory factors in the female physician's work environment.

Strong selection factors among female physicians have led to a super healthy worker effect, whereby the overall morbidity and mortality from most medical disorders is less than in the general or working populations.¹⁻⁷ It is therefore striking to note the consistent findings that physicians, particularly women, experience high rates of exhaustion, burnout, and depression and a high risk for suicide.^{2-6,8-21} There has been increasing attention and concern about the high rates of suicide among female physicians.^{5,16,20,22} In a meta-analysis of published studies among male and female physicians, Schernhammer and Colditz⁵ concluded that while in men the suicide rates were "modestly" elevated compared with the general population, in female physicians these rates were highly elevated (aggregate rate ratio, 2.27; 95% CI, 1.90-2.73).

Suicide impacts not only the physician's personal circle but also colleagues, staff, and patients. The situation among female physicians is serious, not least because of society's increasing dependence on this group of health care providers.²³ While it is difficult to predict which physicians will attempt or complete suicide, recent suicidal ideation is generally a sensitive and specific predictor of suicide risk.²⁴⁻²⁶ Hem et al²⁷ reported that 11.8% of female physicians in Norway reported that they had had suicidal thoughts within the prior 12 months. A more recent study from Hungary²⁵ found the prevalence of suicidal ideas among female physicians (20.3%) to be significantly higher than among female white-collar worker referents (12.3%). Among Norwegian physicians of both genders during the first year of postgraduate training, 14.0% reported that they had recently (within the prior 12 months) thought about suicide. Being single was found to have the strongest multivariate association with recent suicidal thoughts.²⁸

Personality traits, substance abuse, and mental health have been the major focus of studies exam-

ining the reasons for suicide risk among physicians. There has been relatively less attention paid to work characteristics. The US Women Physicians' Health Study²⁹ found a significant association between having attempted suicide and having experienced moderate to severe harassment in the medical setting. There is some evidence from Hungary that long working hours were significantly associated with suicidal ideation,²⁵ although this was not found among Norwegian physicians.²⁸

The academic clinical setting is a particularly challenging work environment for physicians, involving clinical work, teaching, and medical research. The working climate at university hospitals is extremely competitive.^{30,31} Harassment and gender discrimination are frequently reported in academic medicine.³² The HOUPE (Health and Organisation among University Physicians in four European countries) study³¹ examined the working environment and career paths of these physicians and whether they were related to indicators of health and ill health, including the risk for suicide and other serious mental health outcomes. Queries about suicide were included in the protocol from the Swedish and Italian centers. The present study from the HOUPE project explores the relationship between harassment and other work stressors faced by female physicians in university hospitals and recent suicidal ideation in Sweden and Italy to identify modifiable aspects of the work organization that could have spurred a physician to think about taking her own life. Such findings could inform future preventive intervention studies.

MATERIALS AND METHODS

Study Design

The present study used baseline cross-sectional data from female physicians from Sweden and Italy participating in the HOUPE study—an ongoing longitudinal research program concerning work-related health, organizational culture, career paths, and working conditions in university hospitals in 4 European countries (Sweden, Norway, Iceland, and Italy).

Settings

In Sweden, data were collected from Karolinska University Hospital, Stockholm, from June 1,

2005, to September 7, 2005. In May 2005, eligible physicians (permanently employed and actively working) received written information about the survey in addition to short oral presentations in organizational forums, wherever possible. The former included a description of the study with endorsement by the director of the Karolinska University Hospital, the chairperson of the local medical association, and the project manager.

A letter was sent to each eligible physician containing a personal password and log-on information to access the Web-based questionnaire. The joint data collection via the Internet was organized centrally for the 3 Nordic countries at www.houpe.no, hosted by the Department of Research and Development at St. Olav's University Hospital, Trondheim, Norway.

Measures were taken to ensure that only authorized personnel could monitor the data-collection process and authorize new log-on information for participants who had lost their personal access codes. All participants used their personal log-on information to enter their responses anonymously.

Four reminders were sent by electronic mail. In addition, a paper version of the questionnaire was sent to provide an alternative for those who were reluctant to respond electronically.

In Italy, the study was carried out at the University Hospital, Padua, Italy. The physicians received their questionnaire only on paper. They participated in the survey from December 1, 2005, to March 1, 2006. All the eligible physicians received a letter in November 2005 containing a description of the study and endorsement by the Director of the Azienda Ospedaliera di Padova and the Dean of the Medical Faculty. The questionnaire was sent by internal mail in an addressed return envelope that did not include information about the sender. Informal reminders were sent to the directors of the various units.

A precondition for carrying out the study was that the questionnaire be as short as possible. In both countries, it was considered that the physicians should be able to complete the questionnaire within 20 minutes.

Participants

Physicians were eligible if they were permanently employed and actively working at Karolinska

University Hospital or Padua University Hospital at the time of data collection and were not currently receiving specialization training. The HOUPE project was approved by the director of each hospital and by the regional ethics board and data inspectorate in each country. The Swedish Project was examined and approved by the regional ethics board in Stockholm (reference number 04-913/2). The Italian Project was examined and approved by the ethics board at Azienda Ospedaliera di Padova (Prot. 1039P 9/5/2005). Both of those review boards complied fully with the Declaration of Helsinki.

A list with home addresses of all currently employed physicians was obtained from the hospital administration in both countries. This analysis presents the data from the female participants in the HOUPE study from those 2 university hospitals.

Variables

Eight items, about academic career and specialization, working conditions, organization and subjective perceptions of fair treatment, from the Physician Career Path Questionnaire,³⁰ were used. The participants were also asked whether they had ever diagnosed and treated themselves for symptoms for which they would have referred a patient to a specialist, and whether they had ever sought professional help for depression or burnout. Queries were also made about age, living with a partner, and number of children.

Queries about harassment at work, organizational culture, and the balance between work and private life were taken from the General Nordic Questionnaire for Psychological and Social Factors at Work.³³ All items, except those assessing harassment, are measured on a 5-point Likert-type scale (1 = very seldom or never to 5 = very often or always). We also included 1 question about meetings to discuss demanding and stressful situations at work.³⁴

Recent (within the prior 12 months) suicidal thoughts and acts were assessed using 3 dichotomous (*yes/no*) questions about suicidal ideation, thoughts about specific ways to commit suicide, and actual suicidal attempts. One dichotomous (*yes/no*) query was also made about lifetime suicidal ideation. These questions were taken from

the Questions about Suicidal Ideation and Attempted Suicide.³⁵

Data Sources/Measurements

The questionnaire administered in Sweden was in the English language, and, as mentioned, participants had the option of completing it online or on paper. In the development of the HOUBE study, it was decided that language equivalence would be best achieved using English in the joint Scandinavian questionnaire because in the 3 participating Scandinavian countries (Sweden, Norway, and Iceland), nearly all of the texts in the medical-education program are in English; thus, familiarity with the English language is a prerequisite for completion of medical education. English can be considered as a nearly congruent language among university hospital physicians in Sweden.

In Italy, only paper surveys were used, and because medical education in Italy is completely in Italian, the surveys were prepared in Italian using the translation-back-translation method.³⁶

On the paper version of the questionnaire, after each set of 7 to 10 questions (the number that fit on a printed page), participants were asked to ensure that all of the questions in that set (or on that page) had been answered before continuing. In the electronic version, all unanswered items were displayed and the participant was asked to complete them.

Study Size

There were 2 university hospitals whose administrative leaderships were willing to cooperate with the HOUBE study. All eligible physicians working at those hospitals were invited to participate. Both hospitals employed a substantial percentage of female physicians, who were the focus in the present paper.

Statistical Methods

The distributions of all continuous and semi-continuous variables were assessed with respect to skewness and kurtosis. Means were compared using 2-sample *t* tests for normally distributed variables. Nonparametric analysis (Mann-Whitney) was used to assess group differences with respect to continuous variables that showed skewness or kurtosis. Between-group differences in discrete

variables were examined using χ^2 tests. Bivariate analysis was performed via correlation and χ^2 tests, to identify confounders for which adjustment should be made in the multivariate models and to rule out colinearity of independent variables. Logistic regression analysis was first performed with each of the potential independent variables to find the significant and near-significant unadjusted odds ratios (ORs) with respect to the outcome. Extensive testing using multiple logistic regression (MLOGR) was performed to identify parsimonious sets of noncolinear independent variables (demographic, career paths, organizational culture, and working conditions) that explained the largest amount of variance for the outcome variable. Based on the numerous differences in the work, career, demographic, and other characteristics, we considered that country was a key effect modifier; therefore, stratified MLOGR analysis was performed among the Swedish and Italian physicians. SPSS version 16 (SPSS Inc., Chicago, Illinois) was used throughout.

RESULTS

Participants

A total of 571 female physicians from Sweden were eligible for inclusion and were contacted as described. Of these, 385 (67.4%) responded. A total of 280 female physicians from Italy were eligible to be included, with 126 of the Italian physicians responding (45.0%).

Nonparticipants

Based on data from the hospital administration concerning the ages of the eligible physicians, 67 nonparticipants from Sweden were aged <50, and 119 were aged ≥ 50 years; the nonparticipants were significantly overrepresented in the age group of ≥ 50 ($\chi^2 = 22.4$; $P < 0.001$). Five nonparticipants from Italy were aged <40 years, 64 were aged 40 to <50 years, and 85 were aged ≥ 50 ; the Italian nonparticipants were also significantly overrepresented in the group aged ≥ 50 years ($\chi^2 = 4.0$; $P < 0.05$).

Missing Data

Despite the earlier-described reminders to check for completeness, ~4% of the Swedish participants

left substantial portions of the questionnaire blank. Significantly more than the expected number of Swedish physicians who did not answer the query about recent suicidal thoughts also did not answer the other queries related to suicide (having thought of a specific way to commit suicide within the past 12 months: $\chi^2 = 322$, $P < 0.001$; having made a suicide attempt within the prior 12 months: $\chi^2 = 271$, $P < 0.001$; ever having had suicidal thoughts: $\chi^2 = 257$, $P < 0.001$). Physicians who did not answer the questions related to suicide also did not answer many of the other items. Those physicians from Sweden who did not answer the question about recent suicidal thoughts did not differ significantly from the physicians from Sweden who did answer the questions related to suicide with respect to age, academic position, or having a PhD. The Swedish nonsurgical specialists were overrepresented among those who did not answer the question about recent suicidal ideation ($\chi^2 = 7.52$; $P = 0.01$).

All but 1 of the 19 Swedish female physicians who did not answer the question about recent suicidal ideation had submitted the questionnaire online. Perhaps this method was more conducive to submitting an incomplete questionnaire than not participating at all. There were no missing answers to the query about recent suicidal thoughts among the questionnaires submitted by the Italian physicians.

Descriptive Data Including Outcome

Tables I to III show the descriptive data stratified to compare the characteristics of the physicians from Sweden and Italy. Compared with the Italian physicians, significantly more than the expected number of Swedish physicians were living with a partner, had at least 1 child, and had ever thought of suicide, but fewer diagnosed and treated themselves. Overall, 13.7% and 14.3% of the participants from Sweden and Italy, respectively, reported suicidal thoughts within the prior 12 months (**Table I**). As shown in **Table II**, compared with the Italian physicians, significantly higher-than-expected proportions of Swedish physicians had a PhD, but fewer held an academic position at the level of associate professor or higher.

The Italian physicians had completed medical school at a significantly younger mean age and also had a significantly larger mean number of published articles compared with the Swedish physicians. As **Table III** shows, the proportions of physicians who reported recent degrading experiences or harassment, not having meetings to discuss stressful situations at work, and not having had ≥ 3 consecutive weeks of vacation were significantly greater among Italian physicians compared with the Swedish physicians. The Italian physicians worked significantly more hours per week, had a greater percentage of work time devoted to patient care and to research, were more often given assignments without adequate resources to complete them, lacked someone at work to look after their interests, and less often perceived that their competence was accurately valued.

The χ^2 analysis between the outcome variable and other suicide-related queries revealed significant associations. Twenty-seven of the physicians from Sweden and 10 from Italy indicated recent suicidal ideation and that they had thought of a specific way to commit suicide ($\chi^2 = 142$ and 40.9, respectively; both, $P < 0.001$). Forty-seven physicians from Sweden and 18 from Italy indicated that they had ever had suicidal ideation during their lifetimes and recently ($\chi^2 = 98.8$ and 71.7; both, $P < 0.001$). None of the physicians indicated that they had attempted suicide within the previous 12 months.

Analysis of Potential Sources of Bias

Because self-reporting of both outcome and work stressors within the same questionnaire might have been a potential source of bias, we attempted to avoid explicitly stating that recent suicidal thoughts were being assessed as the outcome variable. We also analyzed the relationship between subjective perceptions of fair treatment and recent suicidal ideation and did not find any association between suicidal thoughts and whether a physician believed that her competence had been accurately assessed (Sweden [361 respondents], $\chi^2 = 0.63$; Italy [126 respondents], $\chi^2 = 0.01$), suggesting that negative perceptions were not universally over-reported among physicians with recent suicidal ideation.

Table I. Demographic characteristics, health-related behavior, and suicide-related queries for Swedish and Italian female physicians. Values are no. (%) of respondents.*†

Characteristic	Sweden (n = 385)	Italy (n = 126)	<i>p</i> ‡
Age group			NS
No. of respondents	385	125	
<35 y	15 (3.9)	5 (4.0)	
35–<40 y	40 (10.4)	12 (9.6)	
40–<45 y	79 (20.5)	19 (15.2)	
45–<50 y	86 (22.3)	36 (28.8)	
50–<55 y	69 (17.9)	30 (24.0)	
55–<60 y	61 (15.8)	17 (13.6)	
60–<65 y	31 (8.1)	6 (4.8)	
≥65 y	4 (1.0)	0	
Living with a partner			<0.05
No. of respondents	369	126	
Yes	298 (80.8)	90 (71.4)	
No	71 (19.2)	36 (28.6)	
No. of children			<0.001
No. of respondents	364	125	
0	67 (18.4)	50 (40.0)	
1 or 2	203 (55.8)	67 (53.6)	
>2	94 (25.8)	8 (6.4)	
Self-diagnosis and self-treatment			<0.05
No. of respondents	367	126	
Yes	200 (54.5)	83 (65.9)	
No	167 (45.5)	43 (34.1)	
Ever received professional help for depression or burnout			NS
No. of respondents	367	126	
Yes	74 (20.2)	16 (12.7)	
No	293 (79.8)	110 (87.3)	
Suicidal ideation within past 12 mo			NS
No. of respondents	366	126	
Yes	50 (13.7)	18 (14.3)	
No	316 (86.3)	108 (85.7)	
Ever had suicidal ideation			<0.05
No. of respondents	364	126	
Yes	122 (33.5)	27 (21.4)	
No	242 (66.5)	99 (78.6)	
Thought of specific way to commit suicide within past 12 mo			NS
No. of respondents	368	126	
Yes	32 (8.7)	13 (10.3)	
No	336 (91.3)	113 (89.7)	

* If significance was obtained and there were >2 categories, the 2 differing groups are indicated by a space between rows.

† Percentages may not total 100% due to rounding.

‡ χ^2 Test with 1 *df* and correction for continuity.

Table II. Professional characteristics of Swedish and Italian female physicians. Data are no. (%) of respondents unless otherwise specified.^{a,b}

Characteristic	Sweden (n = 385)	Italy (n = 126)
Specialty		
Surgical	106 (27.5)	36 (28.6)
Clinical nonsurgical	213 (55.3)	80 (63.5)
Laboratory	37 (9.6)	10 (7.9)
None	29 (7.5)	0
PhD degree		
Yes	198 (51.4) ^c	16 (13.1)
No	187 (48.6)	106 (86.9)
Data unavailable	0	4
Academic position		
Professor	19 (4.9)	3 (2.5)
Associate professor	11 (2.9) ^d	14 (11.5)
Researcher	68 (17.7)	14 (11.5)
None	287 (74.5)	91 (74.6)
Data unavailable	0	4
Age when completed medical school		
Mean (SD)	29.1 (4.0) ^{e,f}	25.7 (2.2)
Range	23–45	23–36
Number of published scientific articles ^g		
Mean (SD)	2.9 (1.5) ^{h,i}	4.3 (1.8) ^j
Range	1–7	1–7

^aIf significance was obtained and there are >2 categories, the 2 differing groups are indicated by a space between rows.

^bPercentages may not total 100% due to rounding.

^c $P < 0.001$ versus Italy (χ^2 test with 1 *df* and correction for continuity).

^d $P < 0.05$ versus Italy (χ^2 test with 1 *df* and correction for continuity).

^e $P < 0.001$ versus Italy (Mann-Whitney *U* test).

^fData unavailable in 11 participants.

^gScale: 1 = 0 articles; 2 = 1–5; 3 = 6–15; 4 = 16–30; 5 = 31–50; 6 = 51–100; and 7 = >100.

^h $P < 0.001$ versus Italy (2-sided *t* test).

ⁱData unavailable in 30 participants.

^jData unavailable in 2 participants.

Main Results

On logistic regression, in physicians from both countries taken together, the unadjusted risk estimates for the various factors suggested significant relationships between recent suicidal ideation and having recently experienced degrading experiences/harassment at work, often or always being given assignments without adequate resources to com-

plete them, a lack of meetings to discuss stressful situations at work, self-diagnosis and self-treatment, and having sought professional help for burnout or depression ($P < 0.001$, $P = 0.021$, $P < 0.001$, $P = 0.009$, and $P < 0.001$, respectively) (**Table IV**). Among the physicians from Sweden, the most powerful multivariate model for such thoughts included 2 independent variables related to work: degrading experiences/harassment at work (OR, 3.03; 95% CI, 1.48–6.23), and work meetings to discuss stressful situations (OR, 0.36; 95% CI, 0.19–0.69) (**Table V**). Among the physicians from Sweden, a significant association was found between self-diagnosis and self-treatment and having received professional help for burnout or depression ($\chi^2 = 8.66$; $P = 0.003$). Each of these collinear variables yielded significant findings on MLOGR when all of the other covariates were included; however, self-diagnosis and self-treatment were associated with a more powerful multivariate model.

The factor of work meetings to discuss stressful situations was also in the multivariate model in the physicians in Italy (OR, 0.21; 95% CI, 0.05–0.86), together with being given work assignments without adequate resources (OR, 5.0; 95% CI, 1.32–18.8) (**Table V**). Significant non-work-related factors in the Italian model were younger age and having received professional help for burnout or depression (**Table V**).

DISCUSSION

Comparisons between the physicians from Sweden and Italy reveal some significant differences with respect to demographic, professional, and work-environmental characteristics. These differences necessitated stratified analysis by country with respect to the primary outcome variable, recent suicidal ideation. The unadjusted risk estimates were found to have substantially different patterns, although there were some similarities. The most powerful multivariate model with respect to recent suicidal ideation among all female physicians combined included 2 independent variables related to work: (1) recent degrading experiences or harassment at work and (2) meetings to discuss stressful situations at work. Based on the findings from these

Table III. Characteristics of the work environment, subjective perceptions of fairness, and work/family interface among Swedish and Italian female physicians. Data are no. (%) of respondents unless otherwise specified.^{a,b}

Characteristic	Sweden (n = 385)	Italy (n = 126)	Characteristic	Sweden (n = 385)	Italy (n = 126)
Degrading experiences/ harassment at work in the prior 6 months			Proportion of work time (cont'd)		
No. of respondents	363	126	Administration		
Yes	57 (15.7) ^c	33 (26.2)	Mean (SD)	22.9 (20.6) ^f	11.3 (16.7)
No	306 (84.3)	93 (73.8)	Range	0–95	0–98
Meetings to discuss stressful situations at work			Research		
No. of respondents	367	126	Mean (SD)	9.6 (15.3) ^h	11.2 (11.5)
Yes, regularly	75 (20.4)	19 (15.1)	Range	0–100	0–49
From time to time but not formal	144 (39.2) ^d	35 (27.8)	Teaching		
No	148 (40.3)	72 (57.1)	Mean (SD)	7.8 (9.0)	9.0 (9.2)
≥3 Consecutive weeks of vacation in the past 3 y			Range	0–50	0–40
No. of respondents	376	126	Given assignments without adequate resources to complete them		
>2 Times	283 (75.3)	19 (15.1)	No. of respondents	370	126
2 Times	65 (17.3)	28 (22.2)	Mean (SD)	3.1 (1.0) ⁱ	3.3 (1.1)
1 Time	19 (5.1) ^e	30 (23.8)	Range	1–5	1–5
Never	9 (2.4)	49 (38.9)	Someone at work looks after the physician's interests		
No. of work hours/wk at the university hospital			No. of respondents	371	123
No. of respondents	352	121	Mean (SD)	2.4 (1.1) ^g	1.7 (1.0)
Mean (SD)	42.0 (7.6) ^f	44.1 (6.9)	Range	1–5	1–5
Range	8–70	9–65	Demands of work interfere with family life		
Proportion of work time			No. of respondents	367	126
No. of respondents	371	123	Mean (SD)	3.68 (0.94)	3.76 (1.0)
Patient care			Range	1–5	1–5
Mean (SD)	55.0 (25.6) ^g	67.8 (23.7)	Perceives that competence is accurately valued		
Range	0–100	0–100	No. of respondents	372	126
			Yes	245 (65.9) ^d	61 (48.4)
			No	127 (34.1)	65 (51.6)

^aIf significance was attained and there are >2 categories, the 2 differing groups are indicated by a space between rows.

^bPercentages may not total 100% due to rounding.

^c $P < 0.05$ versus Italy (χ^2 test with 1 *df* and correction for continuity).

^d $P < 0.01$ versus Italy (χ^2 test with 1 *df* and correction for continuity).

^e $P < 0.001$ versus Italy (χ^2 test with 1 *df* and correction for continuity).

^f $P < 0.001$ versus Italy (Mann-Whitney *U* test).

^g $P < 0.001$ versus Italy (2-sample *t* test).

^h $P < 0.01$ versus Italy (Mann-Whitney *U* test).

ⁱ $P < 0.05$ versus Italy (2-sample *t* test).

stratified analyses, these meetings appear to be a protective factor in physicians, regardless of country of residence. In contrast, in the physicians from Sweden, degrading experiences/harassment at work was found to have significant multivariate association with recent suicidal ideation, whereas

this was not the case among the physicians from Italy. On the other hand, having assignments without adequate resources was found to be significantly related to recent suicidal ideation in the multivariate analysis in physicians from Italy only.

Table IV. Significant unadjusted odds ratios (ORs) among Swedish and Italian female physicians for suicidal thoughts within the past 12 months as the outcome variable.

Independent Variable	Sweden	Italy	All Participating Female Physicians
Degrading experiences/harassment at work in the past 6 months			
Unadjusted OR (95% CI)	3.36 (1.70–6.66)	–	3.08 (1.75–5.42)
<i>P</i>	0.001	–	<0.001
Often or always given assignments without adequate resources to complete them			
Unadjusted OR (95% CI)	–	–	1.83 (1.09–3.06)
<i>P</i>	–	–	0.021
Meetings to discuss stressful situations at work			
Unadjusted OR (95% CI)	0.33 (0.18–0.72)	–	0.37 (0.21–0.63)
<i>P</i>	0.001	–	<0.001
≥3 Consecutive weeks of vacation >3 times in past 3 y			
Unadjusted OR (95% CI)	0.47 (0.25–0.88)	–	–
<i>P</i>	0.018	–	–
Work demands often or always interfere with family life			
Unadjusted OR (95% CI)	2.22 (1.17–4.41)	–	–
<i>P</i>	0.023	–	–
Self-diagnosis and self-treatment			
Unadjusted OR (95% CI)	2.72 (1.39–5.32)	–	2.12 (1.21–3.73)
<i>P</i>	0.003	–	0.009
Age*			
Unadjusted OR (95% CI)	–	0.63 (0.44–0.90)	–
<i>P</i>	–	0.01	–
Has sought professional help for depression or burnout			
Unadjusted OR (95% CI)	3.58 (1.90–6.75)	4.90 (1.51–15.89)	3.76 (2.16–6.55)
<i>P</i>	<0.001	0.008	<0.001

*This risk assessment is for a 5-year increment in age.

Non-work-related factors were found to have distinct patterns in the 2 countries. Younger age was associated with recent suicidal ideation among the physicians from Italy but not Sweden. There was a significant association between seeking professional help for burnout or depression and having recent suicidal thoughts in the physicians in both countries. However, the most powerful model in physicians in Sweden included diagnosing and treating themselves. There were no significant associations between suicidal ideation within the prior 12 months and not having a partner or children.

Interpretation

Suicide among female physicians is a major concern. Timely detection of risk and effective prevention are vital. In the present study, recent suicidal ideation was associated with also thinking about a method by which to do so, suggesting that female physicians who have had suicidal thoughts within the prior year are at risk for carrying it out. Suicidal ideation is generally found to be a sensitive and specific indicator of suicide risk.^{24–26} Because physicians might be more aware of these methods than the general population,²⁷ having suicidal thoughts should be taken particularly seriously in this population.

Table V. Multiple logistic regression models among Swedish and Italian female physicians for suicidal thoughts within the past 12 months as the outcome variable.

Group	Model χ^2 (<i>P</i> level)	Independent Variable	Adjusted OR	95% CI	<i>P</i>
All participating female physicians (<i>N</i> = 474 complete cases) Yes = 66, No = 408	44.7* (<0.001)	Meetings to discuss stressful situations at work	0.36	0.20–0.63	<0.001
		Degrading experiences/harassment at work in the past 6 months	2.36	1.29–4.34	0.006
		Age	0.82	0.68–0.99	0.03
		Professional help for depression or burnout	3.31	1.80–6.12	<0.001
Swedish (<i>N</i> = 350 complete cases) Yes = 48, No = 302	30.3 [†] (<0.001)	Meetings to discuss stressful situations at work	0.36	0.19–0.69	0.002
		Degrading experiences/harassment at work in the past 6 months	3.03	1.48–6.23	0.003
		Self-diagnosis and self-treatment	2.33	1.15–4.72	0.019
Italian (<i>N</i> = 124 complete cases) Yes = 18, No = 106	23.4* (=0.001)	Meetings to discuss stressful situations at work	0.21	0.05–0.86	0.03
		Often or always given assignments without adequate resources to complete them	5.00	1.32–18.8	0.018
		Professional help for depression or burnout	8.40	1.95–36.1	0.004
		Age [‡]	0.47	0.30–0.74	0.001

OR = odds ratio.

* In addition to the significant independent variables, the model includes living with a partner and number of children as covariates that were not statistically significant.

[†] In addition to the significant independent variables, the model includes age, living with a partner, and number of children as covariates that were not statistically significant.[‡] This risk assessment is for a 5-year increment in age.

Significant multivariate associations were found between several aspects of the physicians' work environment and suicidal ideation in the present study. These findings differ from the conclusions of Hem et al²⁷ and Center et al²² that work stressors do not appear to be associated with suicide risk among physicians. The present findings concerning degrading experiences among the physicians from Sweden are consistent with those from Frank and Dingle²⁹ among 4501 female physicians in the United States. They reported that serious harassment in the medical setting was significantly associated with a history of attempted suicide. In a longitudinal study of 2884 medical students in 16 nationally representative US medical schools,

the same group of authors found that those who had experienced harassment had significantly poorer mental health and lower career satisfaction compared with those who did not have such experiences.³⁷

Being given assignments without adequate resources also might contribute to suicidal thoughts and was a significant multivariate finding in the physicians from Italy in the present study. The present data for the physicians from Italy also indicated longer work hours, less vacation time, and a greater percentage of clinical care compared with the Swedish physicians. In addition, the physicians from Italy indicated more engagement in scientific activity, having published more articles

and devoting a greater percentage of their work time to research. Based on these survey responses, the physicians from Italy appear to be more obliged to succeed in a dual clinical and academic career path with few opportunities for rest and recovery. Not having the resources to get the job done might be considered consistent with the concept of means/ends conflicts within the broader framework of general stress/strain theory in social psychology.^{38,39} Being given assignments without adequate resources to complete them might be the “straw that breaks the camel’s back.”

Importantly, one possible protective factor was identified in the physicians in Sweden and Italy: meetings to discuss stressful situations at work. Our findings suggest that incorporating such meetings into the work schedules at academic and other hospitals might be a feasible preventive/interventional strategy.

In a number of cross-sectional and longitudinal studies carried out among a broad range of physicians mainly in Norway and Sweden, being single and without children were associated with suicidal ideation, suicide attempts, and/or completed suicide.^{8,27,28,40,41} In the present study, however, even among the physicians from Italy, a significantly greater proportion of whom were living without a partner or children, neither of these factors was associated with suicidal ideation. Our study focused on a specific and selected group of physicians working in an extremely competitive environment (ie, the university hospital) that requires heavy involvement. For example, we found that female physicians working at the university hospital in Stockholm took, on the average, only half of the permitted 12-month parental leave.³⁰ Based on findings such as those from the present study, work-environmental factors appear to acquire an overarching importance in these physicians with regard to crucial aspects of mental well-being.

Physicians might be reluctant to seek medical attention; they might self-diagnose and self-treat their disorders, including mental health disorders.^{7,31,42–44} The competitive arena of academic medicine appears to promote this strategy.³⁰ The present findings suggest that self-diagnosis and

self-treatment might have the deleterious consequence of an increased risk for suicidal ideation.

Because full anonymity was a requirement of the HOUPE study, it was not possible to contact individuals who indicated a risk for suicide. However, the heads of units at both hospitals were informed about the group-level findings. The broader context of the HOUPE study is to promote health among physicians working in the university hospital environment. The HOUPE project has the full approval and support of the respective hospital leaderships. In both participating centers, there are well-established mental health programs that are fully and easily accessible and free of charge for all physician employees.

Generalizability

The present study was conducted in 2 European countries with marked differences in medical education, hospital organization, health care systems, as well as in more general cultural aspects. Nonetheless, the prevalences of recent suicidal thoughts in female physicians were similar between these 2 academic hospital settings. Meetings to discuss stressful work situations were found to be a significant multivariate indicator of a lower risk for recent suicidal ideation in the physicians from Italy and Sweden. Whether such meetings would be helpful in university hospitals in other western European countries and elsewhere remains to be confirmed. While there has been substantial investigation of suicidal ideation and risk for suicide among physicians in the Nordic countries,^{2,7,10,15,27,28,40,45} based on literature searches, this is the first study on this topic among physicians in Italy.

Criterion validity for the independent variables in this study was provided by the significant adjusted ORs that suggested a link between specific work stressors and recent suicidal ideation. These findings also provide construct validation for the hypothesis that there is a relationship between recent suicidal thoughts and modifiable aspects of the work environment. This hypothesis was generated within the framework of prevention-oriented research. This exploratory study aimed to provide evidence-based guidelines for developing and testing scientifically based interventions.

Limitations

This initial phase of the HOUPE study was cross-sectional and used self-reported data. Thus, one must be cautious in making inferences about the temporal nature of observed associations, and common method biases might have been introduced. However, the findings from the present analysis suggest that negative subjective perceptions are not universally overreported among physicians with suicidal thoughts.

It seems unlikely that the participating physicians would overreport recent suicidal ideation; if anything, it could plausibly be argued that they would be reluctant to admit such a thought. In contrast to other aspects of poor mental health, such as depression and burnout, "suicide remains nearly as stigmatized as ever."⁴⁶ Physicians often experience stigmatization, including discrimination and punitive measures, if they admit to any suicidal tendency.^{22,42}

The fact that the questionnaire was not presented in the Swedish language might have increased the amount of missing data among the participating physicians in Sweden, as there were fewer missing data from Italy, where the survey was administered in Italian. In Sweden, however, reading comprehension in English is a prerequisite for the completion of medical education because nearly all of the texts used in medical school in Sweden are in English. Based on the authors' clinical experience in medicine and psychology, we consider it likely that the physicians in Sweden who were facing major problems at work would have had similar difficulty completing a questionnaire in their native Swedish language.

That even this relatively short questionnaire had substantial unavailable data might also suggest time constraints among these physicians working at university hospitals. Although it would have been advantageous to explore a number of the areas, especially regarding career paths, harassment, and specifics about work tasks in more detail, this was not possible due to the mentioned requisite that physicians should be able to complete the questionnaire within 20 minutes.

The participation rate was low (45.0%) among the physicians from Italy. This was the first time

that physicians in Italy had received a questionnaire of this kind (confirmed by a literature search), and perhaps unfamiliarity contributed to the low response rate. It may be that having only one option for completing the survey, namely the paper copy, also contributed to the lower participation. Unfortunately, there was limited information available about the physicians who chose not to participate in this study; we know only that physicians aged ≥ 50 years were overrepresented among the nonparticipants. It has been previously reported in studies from Scandinavia that among the general population in this age group, nonparticipation in health surveys may be associated with increased health risks.^{47,48}

The "survivor effect" might have been operative with this study design. The survivor effect increases the likelihood of obtaining null results with respect to exposure to work stressors and adverse health outcomes.⁴⁹

CONCLUSIONS

The findings from the present study suggest that in Sweden as well as in Italy, recent suicidal thoughts are prevalent in female physicians in the academic hospital setting. We concluded that preventive strategies should include work-organizational factors. In both countries, a potential protective factor was holding meetings to discuss stressful work experiences. We recommend, therefore, that such meetings should be more broadly implemented.

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Dr. Fridner designed the study and is the coordinator of the HOUPE study and the principal investigator in Sweden. Drs. Fridner and Belkic analyzed and interpreted the data, searched the literature, and wrote the drafts of the manuscripts. Dr. Fridner and Mr. Marini prepared the data sets. Dr. Minucci is the project manager in Italy and Dr. Pavan is the principal investigator. Dr. Fridner, Mr. Marini, and Drs. Minucci, Pavan, and Schenck-Gustafsson were responsible for data collection and are guarantors of the study. Mr. Marini and Drs. Minucci, Pavan, and Schenck-Gustafsson revised the manuscript.

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