

Career Satisfaction of US Women Physicians

Results From the Women Physicians' Health Study

Erica Frank, MD, MPH; Julia E. McMurray, MD; Mark Linzer, MD; Lisa Elon, MPH;
for the Society of General Internal Medicine Career Satisfaction Study Group

Background: Despite major changes in health care, the prevalence and predictors of career satisfaction have not recently been comprehensively studied in either women or men physicians.

Methods: The Women Physicians' Health Study surveyed a nationally representative random sample (n = 4501 respondents; response rate, 59%) of US women physicians. Using univariate and logistic regression analyses, we examined personal and professional characteristics that were correlated with 3 major outcomes: career satisfaction, desire to become a physician again, and desire to change one's specialty.

Results: Women physicians were generally satisfied with their careers (84% usually, almost always, or always satisfied). However, 31% would maybe, probably, or definitely not choose to be a physician again, and 38% would maybe, probably, or definitely prefer to change their specialty. Physician's age, control of the work environment, work stress,

and a history of harassment were independent predictors of all 3 outcomes, with younger physicians and those having least work control, most work stress, or having experienced severe harassment reporting the most dissatisfaction. The strongest association (odds ratio, 11.3; 95% confidence interval, 7.3-17.5; $P < .001$) was between work control and career satisfaction. Other significant predictors ($P < .01$) of outcomes included birthplace, ethnicity, sexual orientation, having children, stress at home, religious fervor, mental health, specialty, practice type, and workload.

Conclusions: Women physicians generally report career satisfaction, but many, if given the choice, would not become a physician again or would choose a different specialty. Correctable factors such as work stress, harassment, and poor control over work environment should be addressed to improve the recruitment and retention of women physicians.

Arch Intern Med. 1999;159:1417-1426

From the Department of Family and Preventive Medicine and Department of Medicine (Dr Frank), and the Rollins School of Public Health (Dr Frank and Ms Elon), Emory University School of Medicine, Atlanta, Ga; and the Department of Medicine, University of Wisconsin Medical School, Madison (Drs McMurray and Linzer). A complete list of the other members of the Society of General Internal Medicine Career Satisfaction Study Group appears in a box on page 1425.

DESPITE MAJOR changes in the health care system in the past decade, little is known about physicians' current job perceptions or about contemporary factors associated with satisfaction with medical practice. By 2010, 30% of practicing physicians will be women, compared with 8% in 1970.¹ This shift will have diverse and far-reaching effects on a traditionally male-dominated profession²⁻⁵ because women physicians are more likely to provide preventive health services,⁶⁻⁹ maintain patient relationships that decrease the risk of malpractice,^{10,11} spend more time with patients,^{3,12} and have a communication style that improves health outcomes.¹³

Women physicians may have pressures different from men because of a higher likelihood of choosing primary care fields, their communication styles, issues of multiple roles, and discrimination.²⁻⁴ Although more women are entering medicine, there are still gender-linked issues thought to be barriers to satisfaction, such

as sexual and gender-based harassment,^{14,15} salary inequity,^{16,17} isolation and poor gender climate,¹⁸ lack of academic advancement despite comparable work,¹⁸⁻²⁰ and stress related to multiple roles.²¹⁻²³

Although earlier small studies²⁴⁻²⁷ have suggested that women physicians' career satisfaction is at least as high as, if not higher than, men's, understanding women physicians' current issues can help promote their satisfaction and retention in the workforce. Furthermore, job satisfaction is correlated with patient satisfaction²⁸ and compliance,²⁹ and with physician retention and effectiveness.³⁰

To our knowledge, no large, recent, comprehensive studies have been done of the correlates of career satisfaction in either men or women physicians. We therefore examined data from the Women Phy-

This article is also available on our Web site: www.ama-assn.org/internal.

METHODS

The design and methods³¹⁻³³ of the WPHS and the basic demographic, personal, and professional characteristics of respondents^{32,33} have been described elsewhere. In brief, the study used the American Medical Association's Masterfile of all US MD-degree physicians to randomly select 2500 physicians from each of the past 4 decades' graduating classes (1950-1989), including active, part-time, professionally inactive, and retired physicians, aged 30 to 70 years, who were not in residency training programs. Between September 1993 and October 1994, 4 mailings were sent out (final $n = 4501$). An estimated 23% of sampled persons were ineligible to participate because their addresses were wrong or they were men, deceased, living out of the country, or residents, for a 59% calculated response rate of eligible physicians. Nonrespondents were less likely than respondents to be board-certified but did not consistently or substantively differ on other measures; we, therefore, weighted the data by decade of graduation (to adjust for our stratified sampling scheme) and by decade-specific response rate and board-certification status (to adjust for our identified response bias), allowing us to make inferences to the entire population of women physicians graduating from medical school between 1950 and 1989.

We asked, "Are you generally satisfied with your career?" "If you relived your life, would you still want to become a physician?" and "Would you change your specialty?" Using statistical software for the analysis of correlated data (SUDAAN, release 6.40; Research Triangle Institute, Research Triangle Park, NC), we performed χ^2 tests to determine the relationship between career satisfaction and personal and professional characteristics. A significance level of $P < .01$ was used for discussing outcomes of univariate analyses (with the caveat that inferring causality from statistical associations is problematic). For multivariate logistic modeling, our 3 outcome variables were dichotomized to reflect satisfaction or dissatisfaction: "career satisfaction" (always, almost always, usually vs sometimes, rarely, or never), "again become a physician" (definitely, probably vs maybe, probably, or definitely not), and "change specialty" (definitely not, probably not vs maybe, probably, or definitely). Variables significant in univariate analyses at $P \leq .05$ were offered into the model. A modified version of backward selection was used in the statistical analysis, with a preliminary cut point criterion of $P = .30$ and a final cut point of $P = .10$, using the Wald F test. The Hosmer-Lemeshow³⁴ technique was used to test goodness of fit for final models. Although no interactions were initially considered, during the model selection process, an interaction term (birthplace \times ethnicity) was added to improve the fit of the "change specialty" model.

sicians' Health Study (WPHS), a mail survey based on a nationally representative sample, that examined 716 variables in 4501 respondents. In this article, we analyze personal and practice characteristics, indices of psychologi-

cal and physical well-being, the distribution of work time, and outcome measures regarding professional satisfaction and desire to work in their chosen specialty. We sought to determine key variables associated with satisfaction to help craft policy for improving the satisfaction and retention of physicians, especially women physicians.

RESULTS

Among women physicians, 84% felt always, almost always, or usually satisfied with their careers; 69% would definitely or probably want to be a physician again, if given the choice; and 62% would definitely or probably want to stay in their specialty. Basic demographic and professional characteristics of these women physicians have been outlined previously.^{32,33}

UNIVARIATE ASSOCIATIONS

Career Satisfaction

Slightly less than half of younger physicians were very (ie, always or almost always) satisfied with their careers vs two thirds of the oldest physicians (**Table 1**). The highest career satisfaction was seen in Latina physicians, followed by Asian and African American physicians. Those physicians with more children and less home stress were significantly ($P < .01$) more likely to be satisfied, as were strongly religious physicians. Those without a self-reported history of depression and with fewer bad mental health days per month were also more satisfied with their career (the definition of "bad mental health days" is from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System³³: "Considering mental health to include stress, depression, and emotional problems, for how many days in the past month was your mental health not good?").

With the exception of radiologists, physicians in "controllable lifestyle" specialties of anesthesiology, dermatology, and pathology showed high satisfaction vs those in some primary care specialties, in particular, general internal medicine and general practice (**Table 2**). Several work-related variables showed strong associations with dissatisfaction, in particular, work stress, work control, perceived work amount, gender-based and sexual harassment, and number of on-call nights per month. Career satisfaction was higher in those with higher hourly incomes and lower in those with a higher ratio of child care hours to professional work hours per week. Obesity and more days of poor physical health in the past month were somewhat ($P < .01$ and $P < .05$, respectively) univariately associated with less career satisfaction, although not significantly associated with other outcomes, and marital status was not significantly associated with any of the 3 outcomes ($P > .05$; data not shown).

Desire to Again Become a Physician and to Change Specialty

Almost all variables associated with satisfaction were also associated with the desire to be a physician again (Tables 1 and 2). Sexual orientation and number of work hours

Table 1. US Women Physicians' Personal Characteristics and Their Relationship With Career Satisfaction, Desire to Again Become a Physician, and Desire to Change Specialty*

Condition (No. of Physicians)	Career Satisfaction, %			Again Become Physician, %		Change Specialty, %		
	Always or Almost Always	Usually	Sometimes, Rarely, or Never	Definitely or Probably	Maybe, Probably, or Definitely Not	Definitely	Probably or Maybe	Probably Not or Definitely Not
Total (SE)	49 (1)	35 (1)	16 (1)	69 (1)	31 (1)	6 (0.4)	32 (1)	62 (1)
Age, y†								
30-39 (1112)	45	37	17‡	62	38‡	4	29	67‡
40-49 (1334)	49	35	16‡	70	30‡	8	34	58‡
50-59 (1006)	54	35	11‡	81	19‡	8	36	56‡
60-70 (929)	67	25	8‡	85	15‡	8	34	58‡
Ethnicity								
Hispanic (168)	65	25	10‡	72	28‡	7	27	66‡
Black (127)	52	28	20‡	72	28‡	4	38	58‡
Other (122)	40	39	21‡	66	34‡	8	44	48‡
Asian (684)	54	36	10‡	77	23‡	9	39	53‡
White (3204)	47	36	16‡	67	33‡	5	31	64‡
Birthplace								
United States (2818)	49	35	16§	66	34‡	5	30	65‡
Not United States (1177)	50	38	12§	76	24‡	9	38	53‡
No. of children†								
0 (1097)	45	36	19§	62	38‡	5	29	66
1 (589)	46	39	15§	67	33‡	6	32	62
2 (1386)	51	35	14§	72	28‡	6	34	60
3 (770)	53	35	13§	75	25‡	7	33	60
>3 (463)	54	29	17§	75	25‡	7	36	57
Home stress								
Severe (205)	35	34	31‡	64	36§	19	37	44‡
Moderate (1615)	44	39	18‡	66	34§	5	33	62‡
Light (2472)	55	33	12‡	71	29§	5	31	64‡
Religious identification								
None (453)	51	32	16‡	64	36¶	6	28	66§
Low (922)	45	37	18‡	65	35¶	6	32	63§
Moderate (1078)	45	39	15‡	68	32¶	5	38	57§
Strong (1068)	47	38	15‡	71	29¶	5	32	63§
Very strong (805)	60	27	13‡	74	26¶	8	29	64§
History of depression								
Yes (800)	40	38	22‡	63	37¶	9	36	56¶
No (3572)	51	35	14‡	70	30¶	5	32	63¶
Bad mental health days# per month†								
0 (2164)	58	32	10‡	73	27‡	5	30	65‡
1 (525)	52	38	10‡	72	28‡	5	30	65‡
2-6 (1114)	44	38	18‡	67	33‡	5	35	60‡
>6 (455)	26	38	36‡	53	47‡	12	38	50‡

* Number of physicians varies slightly from column to column.

† A continuous numerical choice was permitted for age, number of children, and bad mental health days.

‡ P ≤ .001.

§ P ≤ .05.

¶ Question: "What is your daily stress at home: severe, moderate, or light?"

¶ P ≤ .01.

Question: "Considering mental health to include stress, depression, and emotional problems, for how many days in the past month was your mental health not good?"

per week were 2 new variables modestly associated with interest in choosing another specialty. Of physicians who were not heterosexual, 61% would probably or definitely not change their specialty vs 75% of heterosexual women ($P < .01$, data not shown; with no significant difference by sexual orientation for other outcomes). Interest in specialty change was expressed most frequently by physicians who were not currently working (Table 2).

Older physicians (aged 40-70 years) were twice as likely as the youngest physicians (aged 30-39 years) to definitely desire a change in specialty, Asians were the

least-satisfied ethnic group with regard to specialty, and physicians not born in the United States were less happy with their specialty than physicians born here. A history of depression and more than 6 days per month of poor mental health were also associated with physician interest in changing specialty. Dermatologists were least interested and general practitioners and general internists were most interested in specialty changes; physicians practicing in medical schools reported the most happiness with their specialty choices. Of physicians residing in urban areas, 65% would probably or definitely not de-

Table 2. US Women Physicians' Professional Characteristics and Their Relationship With Career Satisfaction, Desire to Again Become a Physician, and Desire to Change Specialty*

Condition (No. of Physicians)	Career Satisfaction, %			Again Become Physician, %		Change Specialty, %		
	Always or Almost Always	Usually	Sometimes, Rarely, or Never	Definitely or Probably	Maybe, Probably Not, or Definitely Not	Definitely	Probably or Maybe	Probably Not or Definitely Not
Specialty								
Anesthesia (266)	56	33	11†	66	34†	5	28	67‡
Dermatology (94)	62	33	6†	73	27†	1	9	90‡
Emergency medicine (87)	49	36	15†	60	40†	7	35	58‡
Family practice (339)	51	36	13†	69	31†	6	34	60‡
General practice (147)	42	37	22†	67	33†	13	57	30‡
Internal medicine (458)	41	37	22†	64	36†	11	44	45‡
Medicine subspecialty (331)	44	38	18†	72	28†	6	29	65‡
Neurology (62)	45	43	12†	60	40†	2	39	58‡
Ophthalmology (90)	50	37	13†	56	44†	3	20	77‡
Obstetrics-gynecology (303)	53	30	17†	66	34†	5	31	64‡
Pathology (223)	56	34	10†	72	28†	5	28	67‡
Pediatrics (782)	49	39	12†	73	27†	6	33	61‡
Public health (79)	45	37	17†	70	30†	2	43	55‡
Psychiatry (551)	54	32	14†	72	28†	5	26	70‡
Radiology (157)	35	43	22†	53	47†	1	32	68‡
General surgery (42)	58	26	17†	77	23†	8	16	76‡
Surgery subspecialty (91)	47	37	16†	64	36†	2	25	73‡
Other (225)	55	32	13†	81	19†	4	34	62‡
Practice type								
Solo (865)	54	31	15§	70	30‡	7	36	57‡
2 Physicians (232)	51	34	15§	63	37‡	5	31	64‡
Group (978)	48	37	15§	66	34‡	6	33	62‡
Hospital (889)	49	37	14§	69	31‡	5	29	66‡
Medical school (448)	45	36	19§	77	23‡	2	27	71‡
Government (420)	47	40	13§	76	24‡	7	41	52‡
Other (491)	44	33	24§	62	38‡	12	33	55‡
Weekly work hours 								
0 (117)	38	30	32§	56	44	24	36	40†
1-20 (313)	45	31	23§	67	33	5	36	59†
21-39 (854)	53	33	14§	68	32	5	31	63†
40 (543)	48	37	15§	71	29	7	38	55†
41-59 (1589)	47	39	14§	68	32	5	31	64†
>59 (859)	51	32	17§	70	30	7	30	62†
On-call nights per month 								
0 (1428)	50	32	18‡	70	30	8	34	58§
1-3 (467)	42	41	16‡	72	28	4	33	63§
4-6 (676)	50	39	11‡	70	30	4	29	67§
7-9 (562)	46	41	14‡	68	32	7	33	61§
10-29 (776)	50	33	17‡	65	35	6	33	61§
30-31 (326)	58	26	16‡	69	31	5	30	65§
Child care—work hour ratio								
No children (1097)	45	36	19‡	62	38‡	5	29	66§
Child care ratio (952)	58	32	10‡	79	21‡	7	36	57§
>0 to ≤0.49 (656)	49	39	12‡	72	28‡	6	34	60§
>0.49 (677)	46	36	17‡	68	32‡	5	29	66§

sire a change in specialty vs 58% for rural or 60% for suburban physicians ($P < .01$, data not shown; with no significant difference by practice place for other outcomes).

Those reporting severe work stress were almost 3 times more likely than all other physicians to express a strong interest in changing their specialty. Similarly, 32% of physicians reported a low degree of control of their work environment and were almost twice as likely as other physicians to definitely desire a specialty change.

We explored the effects of child care responsibilities among the subset of women with children younger than 18 years ($n = 1797$). Those who spent fewer hours performing child care had more career satisfaction ($P = .04$)

and more desire to be a physician again ($P = .02$) but a lesser desire to remain in their specialty ($P = .02$). We also found, among those who had attained their ultimate family size (postmenopausal women, $n = 1830$) that there was a significant and linear association between the number of children and career satisfaction (test for trend, $P < .001$), with 90% of these physicians with 4 or more children satisfied with their career choice vs 73% of those with no children.

MULTIVARIATE REGRESSION MODELS

Significantly associated with more career satisfaction were older age, fewer days of bad mental health, less severe ha-

Table 2. US Women Physicians' Professional Characteristics and Their Relationship With Career Satisfaction, Desire to Again Become a Physician, and Desire to Change Specialty* (cont)

Condition (No. of Physicians)	Career Satisfaction, %			Again Become Physician, %		Change Specialty, %		
	Always or Almost Always	Usually	Sometimes, Rarely, or Never	Definitely or Probably	Maybe, Probably Not, or Definitely Not	Definitely	Probably or Maybe	Probably Not or Definitely Not
Work amount								
Too little (91)	27	27	46†	58	42‡	22	29	49‡
Comfortable (2318)	56	33	11†	72	28‡	5	29	66‡
Too much (1596)	43	39	17‡	66	34‡	5	35	60‡
Far too much (272)	30	37	34‡	56	44‡	16	43	42‡
Work control								
Always or almost always (1322)	83	14	3‡	82	18‡	5	27	69‡
Usually (1754)	46	44	10‡	72	28‡	5	32	64‡
Sometimes, rarely, or never (1208)	24	43	33‡	55	45‡	9	38	54‡
Work stress¶								
Severe (540)	27	38	35‡	49	51‡	14	41	46‡
Moderate (2806)	48	38	14‡	69	31‡	4	32	63‡
Light (894)	69	25	6‡	82	18‡	5	26	69‡
Personal income per hour, \$#								
0-36 (1166)	45	37	18‡	68	32	6	32	63
37-59 (1072)	47	39	14‡	68	32	6	32	62
>59 (1113)	56	32	12‡	71	29	5	32	63
History of sex-based harassment in a medical setting								
Yes (1966)	45	36	19‡	64	36‡	7	34	59‡
No (2357)	53	35	12‡	73	27‡	5	31	65‡
History of sexual harassment in a medical setting								
Yes (1425)	45	37	19‡	64	36‡	7	31	62
No (2899)	51	35	14‡	71	29‡	5	33	62
Harassment severity**								
None (1937)	54	35	11‡	74	26‡	5	32	63‡
Mild (872)	52	35	13‡	71	29‡	4	30	66‡
Moderate (955)	45	37	18‡	63	37‡	7	31	62‡
Severe (505)	37	34	29‡	58	42‡	11	39	50‡

*Number of physicians varies slightly from column to column.

†P ≤ .01.

‡P ≤ .001.

§P ≤ .05.

¶A continuous numerical choice was permitted for work hours, child care hours, and on-call nights per month.

¶¶Question: "What is your daily stress at work: severe, moderate, or light?"

#Categorical choices for personal income were \$0, \$1 to <\$25 000, \$25 000 to <\$50 000, \$50 000 to <\$100 000, \$100 000 to <\$150 000, \$150 000 to <\$200 000, \$200 000 to <\$250 000, and ≥\$250 000. Income per hour was estimated for each physician by dividing the income category midpoint by her total work hours per year (inactive physicians were excluded).

**If respondent experienced any form of harassment in a medical setting, she was asked to characterize the worst episode as mild, moderate, or severe.

harassment, less work stress, more work control, a comfortable or only moderately excessive work amount, and 4 to 6 on-call nights per month (**Table 3**). The strongest association of any variable with any outcome was between work control and career satisfaction. Physicians who were always or almost always in control of their work life had 11 times the odds of career satisfaction as those with little control.

Associated with the desire to again become a physician (Table 3, column 2) were older age, less severe harassment, more work control, less work stress, having children, practice type (especially being at a medical school), and stronger religious fervor. Younger physicians, bisexual or homosexual physicians, those with less severe work and home stress, those practicing in medical schools, those with less severe harassment histories, and those with high control of their work lives were more satisfied in their

specialties (Table 3). Birthplace and ethnicity interacted; whereas Asians were more satisfied if born in the United States, Latinas were less satisfied if born here. High specialty satisfaction was reported by dermatologists, surgeons, ophthalmologists, psychiatrists, and anesthesiologists. General practitioners and general internists were particularly interested in changing their specialty.

The **Figure** demonstrates the variables' common relationships with the 3 outcome measures. Core (central) variables for all 3 outcomes are age, work control, work stress, and history of sex-based harassment.

COMMENT

Until recently, studies with small sample sizes of practicing physicians, especially women physicians, made mean-

Table 3. US Women Physicians' Career Satisfaction by a Multivariate Logistic Regression Model*

Condition	Odds Ratio (95% Confidence Interval)†		
	Greater Career Satisfaction	Likely to Again Be Physician	Greater Specialty Stability
Age, y			
60-70	1.7 (1.2-2.5)‡	3.6 (2.7-5.0)§	
50-59	1.4 (1.0-1.9)	2.5 (1.9-3.3)	1.0¶#
40-49	1.0	1.5 (1.2-1.9)	
30-39		1.0	1.4 (1.2-1.7)
Work control			
Always or almost always	11.3 (7.3-17.5)§	2.8 (2.2-3.6)§	1.8 (1.4-2.3)§
Usually	4.0 (3.0-5.3)	1.7 (1.4-2.2)	1.5 (1.2-1.8)
Sometimes, rarely, or never**	1.0	1.0	1.0
Work stress			
Severe	0.4 (0.2-0.6)§	0.5 (0.4-0.7)§	0.4 (0.3-0.5)§
Moderate	0.6 (0.4-1.0)	1.0††	0.7 (0.6-0.9)
Light**	1.0		1.0
Worst harassment‡‡			
None	2.1 (1.5-3.1)§	1.6 (1.2-2.2)#	2.0 (1.5-2.7)§
Mild	1.9 (1.3-2.8)	1.5 (1.1-2.0)	1.9 (1.4-2.5)
Moderate	1.5 (1.0-2.2)	1.1 (0.8-1.5)	1.6 (1.2-2.1)
Severe**	1.0	1.0	1.0
Bad mental health days per month		§§	§§
0	2.3 (1.6-3.2)§		
1	2.3 (1.4-3.6)		
2-6	1.7 (1.2-2.4)		
>6**	1.0		
Work amount		§§	§§
Too little	0.3 (0.1-0.7)§		
Comfortable	1.5 (0.9-2.4)		
Too much	1.6 (1.0-2.6)		
Far too much**	1.0		
On-call nights			
0	0.8 (0.5-1.4)§		
1-3	1.3 (0.7-2.5)		
4-6	2.2 (1.2-4.1)		
7-9	1.8 (1.0-3.2)		
10-29	1.0 (0.6-1.8)		
30 or 31**	1.0		
Practice type	§§		
Other or inactive		0.8 (0.6-1.2)§	1.8 (1.2-2.7)#
Government		1.9 (1.2-2.8)	1.3 (0.9-1.9)
Medical school		2.7 (1.8-4.0)	2.0 (1.4-3.0)
Hospital		1.9 (1.4-2.6)	1.7 (1.2-2.3)
Group		1.2 (0.9-1.7)	1.4 (1.1-1.9)
2 Physicians		0.9 (0.6-1.5)	1.6 (1.0-2.4)
Solo**		1.0	1.0

ingful analysis of their professional satisfaction difficult. We conducted a survey of a large national sample of women physicians that enabled us to assess variables affecting career satisfaction, desire to become a physician again, and a desire to once again choose one's specialty. Age, a history of harassment, low control of the work environment, and high work stress were strong predictors of all the measures of professional dissatisfaction. Physicians' mental health, having children, and practice type were also important in predicting satisfaction with careers or specialty, as were sexual orientation, work and on-call issues, religious fervor, ethnicity, and birthplace.

Our findings show that many potentially malleable factors affect US women physicians' professional satisfaction and that they are a robust group, despite considerable professional and personal challenges. More than half work more than 40 hours per week, more than one

fourth have inadequate work control, more than three fourths report moderate or severe work stress, and many have substantial domestic responsibilities and moderate or severe stress at home. Despite this, they are healthy³³ and profess a high degree of satisfaction in a work environment with challenges and some adversity. The multivariate models confirm the importance of several of these variables in determining US women physicians' overall career satisfaction, desire to again become a physician if reliving their lives, and satisfaction with their specialty.

KEY CAREER SATISFACTION FACTORS

Age

Our findings of older physicians' greater career satisfaction and greater likelihood to want to again become a

Table 3. US Women Physicians' Career Satisfaction by a Multivariate Logistic Regression Model (cont)*

Condition	Odds Ratio (95% Confidence Interval)†		
	Greater Career Satisfaction	Likely to Again Be Physician	Greater Specialty Stability
Specialty	§§		
Anesthesia		0.7 (0.4-1.0)‡	1.7 (1.1-2.6)§
Dermatology		1.0 (0.5-1.9)	6.9 (2.7-17.9)
Emergency medicine		0.6 (0.3-1.2)	1.1 (0.6-2.0)
Family medicine		1.2 (0.8-1.7)	0.9 (0.6-1.3)
General practice		0.6 (0.3-1.2)	0.3 (0.2-0.5)
General internal medicine		0.9 (0.7-1.3)	0.6 (0.4-0.8)
Medicine subspecialty		1.1 (0.8-1.6)	1.1 (0.8-1.6)
Neurology		0.7 (0.4-1.4)	1.0 (0.5-2.2)
Obstetrics-gynecology		1.0 (0.6-1.4)	1.1 (0.8-1.7)
Ophthalmology		0.7 (0.4-1.3)	2.2 (1.1-4.4)
Pathology		0.8 (0.5-1.4)	1.6 (1.0-2.6)
Psychiatry		1.0 (0.7-1.5)	1.9 (1.3-2.7)
Public health		1.0 (0.4-2.2)	0.6 (0.3-1.3)
Radiology		0.5 (0.3-0.8)	1.9 (1.0-3.6)
Surgery		1.6 (0.7-4.0)	2.4 (1.1-5.2)
Surgery subspecialty		1.2 (0.6-2.3)	1.7 (0.9-3.2)
Other		1.6 (1.0-2.7)	1.0 (0.6-1.6)
Pediatrics**		1.0	1.0
Children	§§		
Yes		1.3 (1.1-1.7)#	
No**		1.0	
Religious fervor			§§
Very strong or strong		1.3 (1.1-1.6)#	
Moderate, little, or none**		1.0	
Home stress	§§	§§	
Severe			0.6 (0.4-0.8)#
Moderate			1.0 (0.9-1.3)
Light**			1.0
Sexual orientation			
Heterosexual			0.4 (0.3-0.7)§
Homosexual**			1.0
Birthplace × ethnicity			
United States vs other country**			
Hispanic			0.3 (0.1-0.9)#
Black			2.6 (0.5-1.4)
Other			2.8 (0.6-2.5)
Asian			2.8 (1.4-5.4)
White			1.3 (0.9-1.8)

*The 3 dependent variables were dichotomized, reflecting satisfaction or dissatisfaction: "career satisfaction" (always, almost always, or usually vs sometimes, rarely, or never), "again become physician" (definitely or probably vs maybe, probably not, or definitely not), and "specialty stability" (definitely not or probably not change vs maybe, probably, or definitely change). Only significant variables are shown.

†The odds ratios indicate the odds of being satisfied in level x compared with the odds of being satisfied in the referent level, adjusted for all other variables in the model.

‡P ≤ .05.

§P ≤ .001.

||Referent, 30 to 49 years.

|||Referent, 40 to 70 years.

#P ≤ .01.

**Referent level.

††Referent, moderate and light.

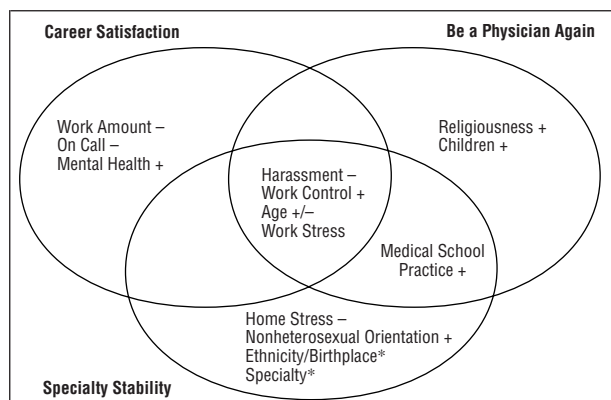
‡‡If respondent experienced any form of harassment, she was asked to characterize the worst episode as mild, moderate, or severe.

§§Not significant.

|||Not tested in this model.

physician may reflect generational differences in attitudes, expectations, experiences, having attained a more senior and more satisfying job, a dimmed recall of training's rigors, "pioneer pride," or a cohort of "survivors" (although we did include inactive and retired physicians [17% of 60- to 70-year-old physicians]). Others^{26,35-37} have also reported greater physician career satisfaction with older age. The lesser likelihood of physicians aged 30 to 40 years wanting to change their spe-

cialty may be attributable to the greater opportunities now available for women¹ in historically male-dominated specialties from which older women graduates may have been excluded. These findings may suggest that more recently graduated physicians could achieve greater career satisfaction as they age, or it may be that younger women physicians are at higher risk for leaving medicine; this merits further tracking and research.



Overlapping variables in the Women Physicians' Health Study predicting career satisfaction, desire to again become a physician, and interest in changing one's specialty. Plus sign indicates a positive relationship with the career satisfaction outcome; minus sign, a negative relationship with the outcome; and plus or minus sign, positive relationships with some outcomes and negative relationships with other outcomes. Refer to text and tables for description of asterisk items.

Children and Multiple Role Issues

Although prior research³⁵⁻³⁷ on women physicians has often focused on adverse outcomes of multiple roles—such as role conflict and strain—marital status was unrelated to any of our career satisfaction outcomes, and most physicians in WPHS described their home stress as light or moderate. Our finding that physicians with children were more interested in again becoming a physician suggests that multiple roles may bring benefits that mitigate strain. A study³⁸ of 419 female Canadian surgeons corroborates this result: 12% were dissatisfied with role conflict between home and career, and 50% thought that childbearing had slowed their careers. However, 88% would have had the same number or more children, and an equal number were satisfied with their surgical careers. Combining roles effectively to achieve “role harmony”³⁹ may nonetheless be difficult for some women and men physicians, requiring effort from individuals, their spouses or partners, and the profession itself.⁴⁰

Religiousness

Devout physicians were more likely than less religious physicians to desire to become a physician again. Religious physicians may retain powerful philosophical motivations that are unaffected by problems troubling other physicians. It could, then, be important to encourage physicians to explore their spirituality as a way to increase their professional satisfaction.

Mental Health

The number of perceived bad mental health days per month was significantly associated ($P < .001$) with a history of depression and of harassment, with work and home stresses, and with career dissatisfaction. Work and home stress are associated conceptually with mental health; however, alternatively, bad mental health days may be a marker for problems other than work and home stress. With these, as with other associations, we can only speculate as to

the nature of causality: a history of depression could cause current career dissatisfaction (eg, through suboptimal career choices or actions committed while depressed), or career dissatisfaction might promote depression (eg, by contributing to feelings of failure or worthlessness). In fact, the association may be even more complex, with dissatisfaction and depression cyclically reinforcing each other, or with these variables affecting each other through a third variable we did not examine (eg, depression adversely affecting relationships with colleagues, and poor collegial relationships creating career dissatisfaction). Regardless of causality, however, the number of self-reported days of poor mental health per month may be a marker for identifying physicians at higher risk for career dissatisfaction.

Specialty Choice

Dermatologists, anesthesiologists, and psychiatrists may be more content due to work-control factors such as on-call demands and control of hours. Surgeons may have pioneer pride or be more satisfied with an especially high locus of control in their daily professional interactions and with higher income. The high dissatisfaction seen in general internists and radiologists is an especially important and potentially remediable target for intervention and further investigation.

Practice Site

Physicians practicing in medical schools had twice the referent groups' odds of desiring to become a physician again and of being comfortable in their specialty. These results suggest benefits to practicing in academia, such as the presence of collegial and intellectually stimulating environments. This suggests that leaders in academic medicine should take care to preserve these benefits that are threatened in today's academic climate. Alternatively, it may suggest that physicians with especially firm convictions about their specialties and about medicine migrate toward academia. This has implications for medical students making decisions about specialty choices because women physicians with whom they are in contact may be more satisfied than those in nonacademic practices. This perception may create inappropriate career expectations. As the practice environment continues to evolve, these predictors may also change.

Work Stress

Work stress was highly associated with all 3 outcomes; highly stressed persons may, therefore, be at risk to leave the profession, change their specialty, or be unhappily employed. Severe stress was described by 13% of the respondents, with 44% reporting working too much or far too much. The changing health care environment may be important here. For example, a recent national study³ showed that women physicians reported more dissatisfaction than men with time available to see patients and that this dissatisfaction worsened with an increasing number of managed care patients in their practice.

Oregon Health Sciences University, Portland: Martha S. Gerrity, MD. University of Wisconsin Medical School, Madison: Jeffery Douglas, PhD; Judith Van Kirk, MS; John Frey, MD; William E. Scheckler, MD; Mark Linzer, MD; Julia E. McMurray, MD. University of Missouri at Columbia School of Medicine: Eric S. Williams, PhD. University of North Carolina at Chapel Hill School of Medicine: Donald E. Pathman, MD, MPH; T. Robert Konrad, PhD. New York University School of Medicine, New York: Mark D. Schwartz, MD. Society of General Internal Medicine, Washington, DC: Elnora Rhodes. Harvard Medical School, Boston, Mass: Judyann Bigby, MD. University of Alabama School of Medicine, Birmingham: Kathleen G. Nelson, MD. University of Kentucky College of Medicine, Lexington: Mary Ramsbottom-Lucier, MD. University of Washington School of Medicine, Seattle: Richard Shugerman, MD.

Control of Work Environment

A sense of control over one's practice environment was highly and consistently correlated with career satisfaction and has been noted in other studies⁴¹ to be a critical predictor of strain for employed women. Given that others³ have also found that women physicians are especially dissatisfied with the amount of time available to spend with patients in managed care settings, the locus of work control emerges as perhaps the most important factor in maintaining an acceptable practice environment. Related issues may include the higher prevalence of women patients (with more psychosocial issues and more time-consuming health maintenance issues⁴²) in the practices of women physicians and the need to control the work environment to manage nonprofessional concerns. Ultimately, more control of the daily work schedule will allow physicians to spend more time with patients and improve the quality of their care.

Harassment

The serious adverse effects of harassment are not surprising, as others have found¹⁵ that harassment may induce fatigue, depression, and a sense of helplessness, worthlessness, or anger. In a recent study⁴³ of cardiothoracic surgeons, women noted significantly more harassment than men and were more likely to say their careers were affected by bias. Other WPHS analyses¹⁵ have shown that harassment of women physicians is also correlated with suicide attempts and depression. Younger women physicians' being more likely than older to report having been harassed¹⁵ may be a reflection of attitudes or recall but also suggests that harassment has not disappeared from the medical landscape. It is disappointing that events that should be as modifiable as harassment would so strongly and persistently contribute to some women physicians' professional unhappiness.^{14,15}

COMPARISON WITH CAREER SATISFACTION IN OTHER PROFESSIONS

Prior researchers⁴⁴ have found that although physicians are more satisfied than nurses with income and professional interactions, 30% of physicians and 20% of nurses would not reenter their respective fields if given the choice. These researchers speculate that medicine's high income and autonomy are partially offset by its high stress and responsibility. Comparable studies of lawyers⁴⁵ have

produced similar percentages (27%) who seriously considered leaving the profession.

SATISFACTION DESPITE ADVERSITY

Some women physicians in our study had high levels of work and home stress and a significant incidence of harassment at work, a finding consistent with studies of "tokenism" in other professions. In work settings where women are less than 15% of the workforce, as is typical in medicine, women often experience more visibility, hostility, harassment, isolation, and stress.⁴⁶ Despite this, 84% of our respondents indicated being generally satisfied with their careers. Other studies⁴⁷⁻⁵⁰ of women professionals have described a "paradox of the contented worker," with women generally having lower pay, status, and authority than men, yet consistently describing themselves as more satisfied than men in the same environment. Hypothesized reasons for this have included different job expectations, different values regarding job and career, greater interest in intrinsic rewards (such as intellectual stimulation and relationships), and less concern about extrinsic rewards (such as pay and prestige). Despite our finding high stated career satisfaction, nearly one third of women physicians would not become a physician again, suggesting that simple or global measures of job satisfaction are insufficient to assess the multiple variables that contribute to physicians' professional happiness.

ADDRESSING THE CAREER SATISFACTION OF WOMEN PHYSICIANS

Final outcome measures, such as quitting the profession, changing specialties, or burnout, were not assessed in the WPHS but will be the focus of future research. Our analyses suggest that malleable workplace variables can help promote career satisfaction for women physicians and retention in the workforce and that leaders in medical training and in health care systems should encourage such changes. In particular, satisfaction would be enhanced by assessing and promoting control of the work environment, evaluating and diminishing work stress, and identifying and eliminating sources of harassment.

Accepted for publication December 1, 1998.

This research has been supported by grants from the Education and Research Foundation, American Medical Association, Chicago, Ill; the American Heart Association, Dal-

las, Tex; National Research Service Award 5T32-HL-07034 from the National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, Md; the Emory Medical Care Foundation, Atlanta, Ga; the Ulrich and Ruth Frank Foundation for International Health, Newton, Pa; the Robert Wood Johnson Foundation, Princeton, NJ; and by a grant from the Graduate School, the School of Medicine, and the Department of Medicine, University of Wisconsin, Madison (Dr Linzer).

Corresponding author: Erica Frank, MD, MPH, Department of Family and Preventive Medicine, Emory University School of Medicine, 69 Butler St, Atlanta, GA 30303-3219.

REFERENCES

- American Medical Association. *Women in Medicine in America: In the Mainstream*. Chicago, Ill: American Medical Association; 1995.
- Kletke PR, Marder WD, Silberger AB. The growing proportion of female physicians: implications for US physician supply. *Am J Public Health*. 1990;80:300-304.
- Collins KS, Schoen CA, Khoransanizadeh F. Practice satisfaction and experience of women physicians in an era of managed care. *J Am Med Womens Assoc*. 1997; 53:52-56.
- Dennis T, Harris I, Petzel R, et al. Influences of marital status and parental status on the professional choices of physicians about to enter practice. *Acad Med*. 1990; 65:775-777.
- Council of Graduate Medical Education. *Fifth Report: Women and Medicine*. Washington, DC: Health Resources and Services Administration, US Dept of Health and Human Services; 1995. Publication HRSA-P-DM-95-1.
- Lurie N, Slater J, McGovern P, Ekstrum J, Quam L, Margolis K. Preventive care of women: does the sex of the physician matter? *N Engl J Med*. 1993;329:478-482.
- Linn LS, Brook RH, Clark VA, Davies AR, Fink A, Kosecoff J. Physician and patient satisfaction as factors related to the organization of internal medicine group practices. *Med Care*. 1985;23:1171-1178.
- Hall JA, Palmer RH, Orav EJ, Hargraves JL, Wright EA, Louis TA. Performance quality, gender, and professional role: a study of physicians and nonphysicians in 16 ambulatory care practices. *Med Care*. 1990;28:489-501.
- Frank E, Harvey LK. Prevention advice rates of women and men physicians. *Arch Fam Med*. 1996;5:215-219.
- Taragin MI, Wilczek AP, Karns ME, Trout R, Carson JL. Physician demographics and the risk of medical malpractice. *Am J Med*. 1992;93:537-542.
- Holder AR. Women physicians and malpractice suits. *J Am Med Womens Assoc*. 1979;34:239-240.
- Kaplan SH, Gandek B, Greenfield S, Rogers W, Ware JE. Patient and visit characteristics related to physicians' participatory decision-making style: results from the Medical Outcomes Study. *Med Care*. 1995;33:1176-1187.
- Levinson W, Roter D. Physicians' psychosocial beliefs correlate with their patient communication skills. *J Gen Intern Med*. 1995;10:375-379.
- Komaromy M, Bindman AB, Haber RJ, Sande MA. Sexual harassment in medical training. *N Engl J Med*. 1993;328:322-326.
- Frank E, Brogan D, Schiffman M. Prevalence and correlates of harassment among US women physicians. *Arch Intern Med*. 1998;158:352-358.
- Carr PL, Friedman RH, Moskowitz MA, Kazis LE. Comparing the status of women and men in academic medicine. *Ann Intern Med*. 1993;119:908-913.
- Baker LC. Differences in earning between male and female physicians. *N Engl J Med*. 1996;334:960-964.
- Fried LP, Francomano CA, MacDonald SM, et al. Career development for women in academic medicine: multiple interventions in a department of medicine. *JAMA*. 1996;276:898-905.
- Kaplan SH, Sullivan LM, Dukes KA, Phillips CF, Kelch RP, Schaller JG. Sex differences in academic advancement: results of a national study of pediatricians. *N Engl J Med*. 1996;335:1282-1289.
- Tesch BJ, Wood HM, Helwig AL, Nattinger AB. Promotion of women physicians in academic medicine: glass ceiling or sticky floor? *JAMA*. 1995;273:1022-1025.
- Cole JR, Zuckerman H. Marriage, motherhood and research performance in science. *Sci Am*. 1987;256:119-125.
- Grant L, Simpson LA, Rong XL, Peters-Golden H. Gender, parenthood and work hours of physicians. *J Marr Fam*. 1990;52:39-49.
- Ducker D. Research on women physicians with multiple roles: a feminist perspective. *J Am Med Womens Assoc*. 1994;49:78-84.
- Stamps PL, Cruz NTB. *Issues in Physician Satisfaction: New Perspectives 1994*. Ann Arbor, Mich: Health Administration Press; 1994.
- Kravitz RL, Linn LS, Shapiro MF. Physician satisfaction under the Ontario Health Insurance Plan. *Med Care*. 1990;28:502-512.
- Cooper CL, Rout U, Faragher B. Mental health, job satisfaction, and job stress among general practitioners. *BMJ*. 1989;298:366-370.
- Cartwright LK. Career satisfaction and role harmony in a sample of young women physicians. *J Voc Behav*. 1978;12:184-196.
- Davis K, Collins KS, Schoen C, Morris C. Choice matters: enrollees' views of their health plans. *Health Aff (Millwood)*. 1995;14:99-112.
- Melville A. Job satisfaction in general practice: implications for prescribing. *Soc Sci Med*. 1980;14A:495-499.
- Linn LS, Yager J, Cope D, Leake B. Health status, job satisfaction, job stress, and life satisfaction among academic and clinical faculty. *JAMA*. 1985;254:2775-2782.
- Frank E. The Women Physicians' Health Study: background, objectives, and methods. *J Am Med Womens Assoc*. 1995;50:64-66.
- Frank E, Rothenberg R, Brown WV, Maibach H. Basic demographic and professional characteristics of US women physicians. *West J Med*. 1997;166:179-184.
- Frank E, Brogan DJ, Mokdad AH, Simoes EJ, Kahn HS, Greenberg RS. Health-related behaviors of women physicians vs other women in the United States. *Arch Intern Med*. 1998;158:342-348.
- Hosmer DW Jr, Lemeshow S. *Applied Logistic Regression*. New York, NY: John Wiley & Sons Inc; 1989.
- Schermerhorn GR, Colliver JA, Verhulst SJ, Schmidt EL. Factors that influence career patterns of women physicians. *J Am Med Womens Assoc*. 1986;41:74-78.
- Bernstein JH, Shuval JT. Emigrant physicians evaluate the health care system of the former Soviet Union. *Med Care*. 1994;32:141-149.
- Osler R. Employment experiences of vocationally trained doctors. *BMJ*. 1991; 303:762-764.
- Mizgala CL, MacKinnon SE, Walters BC, Ferris LE, McNeill IY, Knighton T. Women surgeons: results of the Canadian Population Study. *Ann Surg*. 1993;218:37-46.
- Cartwright LK, Wink P, Kmetz C. What leads to good health in midlife women physicians? some clues from a longitudinal study. *Psychosom Med*. 1995;57: 284-292.
- Levinson W, Tolle SW, Lewis C. Women in academic medicine: combining career and family. *N Engl J Med*. 1989;321:1511-1517.
- La Rosa JH. Women, work, and health: employment as a risk factor for coronary artery disease. *Am J Obstet Gynecol*. 1988;158(pt 2):1597-1602.
- Linzer M, Spitzer R, Kroenke K, et al. Gender, quality of life, and mental disorders in primary care: results from the PRIME-MD 1000 study. *Am J Med*. 1996; 101:526-533.
- Dresler CM, Padgett DL, MacKinnon SE, Patterson GA. Experiences of women in cardiothoracic surgery: a gender comparison. *Arch Surg*. 1996;131:1128-1134.
- Stamps PL, Piedmont EB, Slavitt DB, Haase AB. Measurement of work satisfaction among health professionals. *Med Care*. 1978;16:337-352.
- Smith RS. A profile of lawyer lifestyles. *Am Bar Assoc J*. 1984;70:50-54.
- Wharton AS, Baron JM. Satisfaction? the psychological impact of gender segregation on women at work. *Sociol Q*. 1991;32:365-387.
- Crosby FJ. *Relative Deprivation and Working Women*. New York, NY: Oxford University Press Inc; 1972.
- Phelan J. The paradox of the contented female worker: an assessment of alternative explanations. *Soc Psychol Q*. 1994;57:95-107.
- Mueller CW, Wallace JE. Justice and the paradox of the contented female worker. *Soc Psychol Q*. 1996;59:338-349.
- Hodson R. Gender differences in job satisfaction: why aren't women more dissatisfied? *Sociol Q*. 1989;30:385-399.