Divorce among physicians and other healthcare professionals in the United States: analysis of census survey data

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ABSTRACT

OBJECTIVES
To estimate the prevalence and incidence of divorce among US physicians compared with other healthcare professionals, lawyers, and non-healthcare professionals, and to analyze factors associated with divorce among physicians.

DESIGN
Retrospective analysis of nationally representative surveys conducted by the US census, 2008–13.

SETTING
United States.

PARTICIPANTS
48 881 physicians, 10 086 dentists, 13 883 pharmacists, 159 044 nurses, 18 920 healthcare executives, 59 284 lawyers, and 6 339 310 other non-healthcare professionals.

MAIN OUTCOME MEASURES
Logistic models of divorce adjusted for age, sex, race, annual income, weekly hours worked, number of years since marriage, calendar year, and state of residence. Divorce outcomes included whether an individual had ever been divorced (divorce prevalence) or became divorced in the past year (divorce incidence).

RESULTS
After adjustment for covariates, the probability of being ever divorced (or divorce prevalence) among physicians evaluated at the mean value of other covariates was 24.3% (95% confidence interval 23.8% to 24.8%); dentists, 25.2% (24.1% to 26.3%); pharmacists, 22.9% (22.0% to 23.8%); nurses, 33.0% (32.6% to 33.3%); healthcare executives, 30.9% (30.1% to 31.8%); lawyers, 26.9% (26.4% to 27.4%); and other non-healthcare professionals, 35.0% (34.9% to 35.1%). Similarly, physicians were less likely than those in most other occupations to divorce in the past year. In multivariable analysis among physicians, divorce prevalence was greater among women (odds ratio 1.51, 95% confidence interval 1.40 to 1.63). In analyses stratified by physician sex, greater weekly work hours were associated with increased divorce prevalence only for female physicians.

CONCLUSIONS
Divorce among physicians is less common than among non-healthcare workers and several health professions. Female physicians have a substantially higher prevalence of divorce than male physicians, which may be partly attributable to a differential effect of hours worked on divorce.

Introduction

Professional obligations among physicians often conflict with personal and family life.[1–5] While it has historically been suggested that long and sometimes unpredictable work hours among physicians may lead to higher rates of divorce,[6–8] evidence on whether divorce rates among physicians exceed those in the general population has been limited and mixed.[8–11] One of the first studies to analyze this was in the United States. Published nearly 40 years ago, this study found physicians to have substantially higher rates of divorce and poor self rated marital quality than other occupations, but the study was limited in its generalizability owing to its small, non-representative sample.[11] A subsequent, larger study of 1118 medical graduates of Johns Hopkins University found cumulative rates of divorce of 29%—with rates higher among psychiatrists (50%) and surgeons (33%)—but was limited by its analysis of physicians from a single institution.[9] Finally, a nationally representative analysis that used 1970 and 1980 US census data found similar likelihoods of divorce between physicians and other professional groups, but this study was conducted more than two decades ago.[10] Although several studies done internationally have explored work-home conflicts among physicians and other healthcare professionals,[4 5 12–18] to our knowledge none have explored whether divorce among physicians is more common than in the general population.

There are many reasons to question whether previous estimates of divorce among US physicians are pertinent, given the limited sample sizes of most studies, the changes in demographics, work hours, and earnings among US physicians,[19 20] and the fact that overall divorce rates in the United States have fallen dramatically since the time of these studies (from 5.2 per 1000 Americans in 1980 to 3.6 per 1000 in 2011).[21] In this study, we revisit the question of whether physicians are more or less likely than other professionals to become divorced, by examining more than 40 000 physicians and 200 000 other healthcare professionals surveyed

WHAT IS ALREADY KNOWN ON THIS TOPIC

It has been speculated that the demanding nature of physicians' work leads to divorce rates that exceed those in the general population

Evidence on this both in the United States and internationally has been limited to small and dated studies and evidence has been mixed

Current, nationally representative estimates of divorce among physicians and other healthcare professionals in the United States are unknown, as are factors associated with divorce among US physicians

WHAT THIS STUDY ADDS

Despite concerns about whether the demanding nature of physicians' work leads to higher rates of divorce, divorce among physicians is less common than among the general population and several healthcare professions

Female physicians are substantially more likely to divorce than male physicians, which may be partly attributable to a differential effect of hours worked on divorce

nationally between 2008 and 2013 in the American community survey, a large, nationally representative, annual survey of Americans conducted by the US Census Bureau. With these data we examined how the probability of divorce among physicians compared with other healthcare professionals as well as those not employed in healthcare. We analyzed factors associated with divorce among physicians, including how the number of hours worked differentially influenced the probability of divorce for male and female physicians.

Methods

Data sources

We estimated both the prevalence and the incidence of divorce in various occupational groups using the American community survey, a nationally representative, cross sectional survey of approximately three million households annually, administered by the US Census Bureau. The survey is mandatory and is collected by mail, telephone, and personal visit interviews. The survey, which includes civilian as well as military households, collects information on respondent demographics (age, sex, race, current marital status, and, since 2008, limited questions on marital history) as well as occupation, annual income, and hours worked. Response rates vary from year to year but range between 93% and 98%.[22]

Study population

Each respondent self reported information on age, sex, race, current marital status, occupation, annual income, and weekly hours usually worked (based on hours worked at all jobs). We included individual respondents aged 25 years or more who were employed in the previous year and who reported ever being married (6 649 708 people from 2008 to 2013). Physicians were identified based on a self reported occupation of "physician or surgeon". Other healthcare professionals were identified based on a self reported occupation of either "dentist", "pharmacist", or "nurse". Healthcare executives were identified as those with a self reported management occupation in a healthcare industry and with a graduate degree. We also identified lawyers—based on a self reported occupation of "lawyer"—given their comparability to physicians in terms of graduate education and income. The survey does not collect data on physician specialty.

Our sample included 48 881 physicians, 10 086 dentists, 13 883 pharmacists, 159 044 nurses, 18 920 healthcare executives, 59 284 lawyers, and 6 339 610 other non-healthcare professionals.

Divorce measures

Before 2008 the American census survey only recorded current marital status (married, separated, divorced, widowed, or never married). However, since 2008, the census has asked people several additional questions related to marriage and divorce, including the year in which the respondent was married during their most recent marriage, whether or not he or she divorced in the past year, and the number of times he or she has

been married. Based on these data, we characterized divorce outcomes in three ways. Firstly, we identified whether a respondent was currently divorced at the time of survey. This divorce measure provides a snapshot of whether the probability of being currently divorced at any given time varies by occupation. Secondly, because those who are currently married may have been remarried after a previous divorce, we identified whether respondents had ever been divorced, defined by whether they were either currently divorced or reported being married more than once. This divorce measure reflects the prevalence of divorce—that is, how likely someone was to have ever been divorced at any given time. Thirdly, we identified whether a respondent had divorced in the past year, which reflects the annual incidence of divorce, or what is commonly referred to as the annual divorce rate. Although in our descriptive analysis we reported unadjusted differences across occupation in each of these three measures of divorce, in our statistical analysis—which adjusted for factors associated with divorce—we used the prevalence and incidence of divorce as the primary outcomes.

Statistical analysis

We began by comparing unadjusted measures of divorce (the probability of being divorced at the time of the census survey, the probability of being ever divorced, and the probability of divorcing in the past year) among physicians, dentists, pharmacists, nurses, healthcare executives, lawyers, and others employed outside of the healthcare industry. Those who reported being currently separated from a spouse at the time of survey were not considered to be divorced.

We then estimated multivariable logistic models of divorce prevalence (whether someone had ever been divorced) and divorce incidence (whether someone divorced in the past year). Models were estimated as a function of age (categorized as 25 to 39 years, 40 to 49 years, 50 to 59 years, and ≥60 years), sex, race (categorized as non-Hispanic white, non-Hispanic black, Hispanic, other), occupation, annual income (categorized as <$50 000 (£32 800; €44 140), $50 000 to $99 999, $100 000 to $149 999, $150 000 to $199 999, and ≥$200 000), the number of years since a respondent became married in the most recent marriage (continuous variable, defined by subtracting the year in which the respondent was married during the most recent marriage from the census survey year), and state and year fixed effects.

We adjusted for the number of years since a respondent became married in the most recent marriage for two reasons. Firstly, in comparing the prevalence of divorce across occupations, it is important to recognize that if people in specific occupations tend to marry at different ages, estimated differences in the prevalence of divorce across occupation could reflect differing ages at marriage across occupations rather than different underlying divorce risk. For example, if the annual rate of divorce was identical across occupations but physicians marry later in life, then at any given time physicians would be less likely to report ever having divorced

compared with people in other occupations, simply because they were at risk for less time. Accounting for the length of time since someone was married is therefore important. Secondly, in comparing the incidence of divorce across occupations, it is important to note that the annual incidence of divorce (that is, the hazard rate of divorce) may vary depending on how long someone has been married. Divorce rates may be highest in the years after marriage and may decline with time, implying that the annual divorce rate for those in the 20th year of marriage would be lower than those in the first few years of marriage.[23] Put differently, the divorce hazard may not be constant over time. If professionals in specific occupations marry at different ages, then a survey at a given time may misclassify occupations as having different divorce rates simply because people in those occupations were sampled at varying lengths of time after marriage. It is therefore important to adjust for the number of years since someone became married in the most recent marriage.

After estimating the logistic models, we reported the adjusted prevalence and incidence of divorce by occupation. We computed the adjusted probabilities by taking the predicted values from the logistic regression models holding all covariates except for occupation at their mean values (that is, we held the mean of other covariates constant across occupations). For categorical variables such as state and year, we computed the adjusted values at the means of the individual indicator variables (that is, reflecting the mean proportion of the sample in each category, for example, the proportion of the sample in a given state and year). In this estimation of adjusted divorce prevalence and incidence by occupation, we did not separately adjust for weekly hours worked since the difference in hours worked between physicians and non-physicians is significant and may mediate the effect of being a physician on divorce.

In addition to estimating the adjusted prevalence and incidence of divorce by occupation we examined the impact of age, race, sex, annual income, and hours worked on the prevalence and incidence of divorce among physicians, adjusting for the number of years since someone became married. Specifically, among physicians we estimated a multivariable logistic model of divorce as a function of these covariates and state and year as fixed effects. Given previous evidence that divorce rates are positively correlated with hours worked we also included weekly hours worked (categorized as <39 hours, 40 to 49 hours, 50 to 59 hours, and ≥60 hours) in these within-occupation models.[24]

Finally, we stratified these models by physician sex to study whether factors such as weekly hours worked had differential impacts on the prevalence and incidence of divorce among male compared with female physicians and other healthcare professionals. This analysis was motivated by previous research in the general population of Americans, which showed that the work hours of women are more highly positively correlated with annual divorce rates than are the work hours of men.[24]

Sampling weights were provided by the survey and reflected the survey sampling procedures used to weight all estimates to bring the characteristics of the sample more in agreement with those of the full US population. Statistical analyses were performed using STATA version 13.1 (Stata, College Station, TX).

Results

Characteristics of study population

Table 1 lists the characteristics of the study population. The mean age of physicians was 48.6 SD 12.3) years, intermediate among other healthcare and non-healthcare occupations. The percentage of physicians surveyed who were white was 70.2%, lower than in other healthcare occupations (for example, dentists, 77.4%; nurses, 77.0%; healthcare executives, 79.1%). Among healthcare occupations, physicians and dentists had the largest percentage of men (68.3% and 75.9%, respectively, compared with 8.5% among nurses and 47.7% among pharmacists). Annual income was highest among physicians (mean $223 427, SD $155 417) with 47.1% of physicians earning more than $200 000 annually. Average hours worked per week were highest among physicians (50.4 hours compared with 37.6 hours among dentists, 38.5 hours among pharmacists, 37.1 hours among nurses, 46.0 hours among healthcare executives, 45.1 hours among lawyers, and 39.8 hours in other non-healthcare occupations).

Divorce among physicians versus other occupations

Divorce was less common among physicians than other occupations according to several measures (table 2). The unadjusted probability of being currently divorced at the time of survey was lowest among physicians (7.7%, 95% confidence interval 7.5% to 8.0%) compared with other occupations (dentists, 8.0%; pharmacists, 8.8%; nurses, 17.8%; healthcare executives, 12.7%; lawyers, 10.7%; and other non-healthcare occupations, 17.2%). Divorce prevalence, defined as the percentage of people who reported ever being divorced at the time of survey, was lower among physicians than among most other occupations as well. Among physicians, 22.1% (95% confidence interval 21.8% to 22.5%) had ever been divorced by the time of survey, compared with 22.9% among dentists, 21.5% among pharmacists, 37.0% among nurses, 31.3% among healthcare executives, 27.7% among lawyers, and 36.6% among other occupations. Divorce incidence was generally lower among physicians as well. For example, 1.01% (95% confidence interval 0.92% to 1.10%) of physicians divorced in the year before the survey, an annual divorce rate that was higher than that for dentists but statistically indistinguishable or lower than for all remaining occupations. Finally, physicians were less likely to have been married more than once by the time of survey compared with all other occupations except pharmacists.

Occupational differences in divorce were minimally affected by adjustment for covariates (table 3). The adjusted probability of being ever divorced—that is, divorce prevalence estimated at mean covariate values—among physicians was 24.3% (95% confidence interval 23.8% to 24.8%), compared with 25.2% among dentists (P=0.14 for comparison with physicians), 22.9%

Table 1 | Characteristics of study population, 2008–13

Characteristics	Physicians (n=48 881)	Dentists (n=10 086)	Pharmacists (n=13 883)	Nurses (n=159 044)	Healthcare executives (n=18 920)	Lawyers (n=59 284)	Other occupations (n=6 339 610)
Age:							
Mean (SD) age (years)	48.6 (12.3)	50.5 (12.5)	46.3 (12.8)	46.8 (11.2)	49.1 (10.4)	49.2 (12.4)	47.1 (11.8)
25–39	27.3	22.8	35.8	29.1	20.3	26.2	29.0
40–49	26.7	23.7	24.7	27.4	30.2	25.4	28.5
50–59	25.6	27.7	22.5	29.9	32.4	26.1	26.9
>60	20.4	25.8	17.0	13.7	17.2	22.4	15.6
Race:							
White	70.2	77.4	74.6	77.0	79.1	87.1	70.4
Black	4.5	2.8	5.2	8.8	6.9	4.0	8.9
Hispanic	5.7	5.7	3.4	4.7	4.5	4.3	13.7
Other	19.6	14.1	16.8	9.5	9.5	4.6	7.0
Sex:							
Female	31.7	24.1	52.3	91.5	49.9	31.4	47.1
Male	68.3	75.9	47.7	8.5	50.1	68.6	52.9
Annual income ($):							
Mean (SD) annual income ($)	223 427 (155 417)	189 222 (140 054)	109 975 (61 652)	63 995 (38 163)	143 913 (117 284)	167 015 (139 497)	53 266 (58 104)
<50 000	9.5	10.7	13.1	34.8	10.6	13.3	62.0
50 000 to 99 999	17.0	19.7	23.3	54.3	32.5	25.7	27.4
100 000 to 149 999	13.6	20.7	51.7	8.8	26.9	21.8	6.6
150 000 to 199 999	12.8	12.4	7.7	1.3	11.7	12.2	1.9
>200 000 (%)	47.1	36.6	4.3	0.9	18.3	27.0	2.2
Hours worked a week:							
Mean (SD) hours worked a week	50.4 (16.1)	37.6 (10.7)	38.5 (10.9)	37.1 (10.3)	46.0 (10.6)	45.1 (12.8)	39.8 (12.3)
<39	14.6	46.8	28.4	44.1	9.0	15.2	25.6
40 to 49	28.2	39.5	59.3	46.7	48.4	40.5	55.6
50 to 59	22.5	9.4	8.4	6.1	28.2	28.2	11.8
>60	34.7	4.3	3.9	3.1	14.4	16.1	7.0

$1.00 (£0.66; €0.88).

Table 2 | Characteristics of marriage and divorce, by occupation. Values are percentages (95% confidence intervals) unless stated otherwise

Characteristics	Physicians (n=48 881)	Dentists (n=10 086)	Pharmacists (n=13 883)	Nurses (n=159 044)	Healthcare executives (n=18 920)	Lawyers (n=59 284)	Other occupations (n=6 339 610)
Divorce:							
Divorced at time of survey	7.7 (7.5 to 8.0)	8.0 (7.4 to 8.5)	8.8 (8.3 to 9.2)	17.8 (17.6 to 18.0)	12.7 (12.3 to 13.2)	10.7 (10.5 to 11.0)	17.2 (17.2 to 17.2)
P value	—	0.69	<0.001	<0.001	<0.001	<0.001	<0.001
Ever divorced	22.1 (21.8 to 22.5)	22.9 (22.1 to 23.7)	21.5 (20.8 to 22.2)	37.0 (36.8 to 37.3)	31.3 (30.7 to 32.0)	27.7 (27.3 to 28.0)	36.6 (36.5 to 36.7)
P value	—	0.20	0.22	<0.001	<0.001	<0.001	<0.001
Divorced in past year	1.01 (0.92 to 1.10)	0.87 (0.69 to 1.05)	1.09 (0.91 to 1.26)	1.64 (1.57 to 1.70)	1.15 (1.00 to 1.30)	1.29 (1.20 to 1.38)	1.74 (1.73 to 1.75)
P value	—	0.03	0.59	<0.001	0.06	0.002	<0.001
Marriage:							
Married once	83.8 (83.5 to 84.1)	83.1 (82.4 to 83.9)	85.5 (84.9 to 86.0)	75.7 (75.5 to 75.9)	78.3 (77.8 to 78.9)	80.5 (80.1 to 80.8)	75.9 (75.8 to 75.9)
P value	—	0.09	<0.001	<0.001	<0.001	<0.001	<0.001
Married twice	13.9 (13.5 to 14.2)	14.1 (13.4 to 14.8)	12.6 (12.0 to 13.1)	19.5 (19.3 to 19.7)	18.2 (17.6 to 18.7)	16.4 (16.1 to 16.7)	19.4 (19.4 to 19.5)
P value	—	0.70	0.001	<0.001	<0.001	<0.001	<0.001
Married >3 times	2.4 (2.2 to 2.5)	2.8 (2.5 to 3.1)	2.0 (1.7 to 2.2)	4.8 (4.7 to 4.9)	3.5 (3.2 to 3.8)	3.2 (3.0 to 3.3)	4.7 (4.7 to 4.7)
P value	—	0.002	0.004	<0.001	<0.001	<0.001	<0.001

P values are based on comparison with physicians.
Sample in table is those that were ever married. Divorce prevalence for a given occupation is reflected by percentage of people within an occupation who reported having ever been divorced at time of survey. Annual divorce incidence for a given occupation, or divorce rate, is reflected by percentage of people within an occupation who divorced in year previous to survey.

among pharmacists (P=0.008), 33.0% among nurses (P<0.001), 30.9% among health executives (P<0.001), 26.9% among lawyers (P<0.001), and 35.0% among other non-healthcare professionals (P<0.001). The adjusted probability of becoming divorced in the past year—that is, divorce incidence or divorce rate estimated at mean covariate values—among physicians was 1.0% (95% confidence interval 0.9% to 1.1%), compared with 1.0% among dentists (P=0.73 for comparison with physicians), 1.0% among pharmacists (P=0.62), 1.3% among nurses (P<0.001), 1.1% among healthcare executives (P=0.26), 1.2% among lawyers (P=0.01), and 1.4% among other non-healthcare professionals (P<0.001).

Factors associated with divorce among physicians

In adjusted analysis among physicians (table 4), both divorce prevalence and divorce incidence were more

Table 3 | Adjusted prevalence and incidence of divorce among physicians and other healthcare and non-healthcare professionals, 2008 to 2013

Variables	Physicians	Dentists	Pharmacists	Nurses	Healthcare executives	Lawyers	Other occupations
Divorce prevalence:							
% of respondents ever divorced, adjusted (95% CI)	24.3 (23.8 to 24.8)	25.2 (24.1 to 26.3)	22.9 (22.0 to 23.8)	33.0 (32.6 to 33.3)	30.9 (30.1 to 31.8)	26.9 (26.4 to 27.4)	35.0 (34.9 to 35.1)
P value	—	0.14	0.008	<0.001	<0.001	<0.001	<0.001
Divorce incidence:							
% of respondents divorced in past year, adjusted (95% CI)	1.0 (0.9 to 1.1)	1.0 (0.7 to 1.2)	1.0 (0.8 to 1.2)	1.3 (1.2 to 1.4)	1.1 (1.0 to 1.3)	1.2 (1.1 to 1.4)	1.4 (1.4 to 1.4)
P value	—	0.73	0.62	<0.001	0.26	0.01	<0.001

P values are based on comparison with physicians.
Adjusted prevalence and incidence of divorce across occuptions were estimated from multivariable logistic model of divorce as a function of occupational category, age, sex, race, annual income, years since became married in most recent marriage, and state and year fixed effects. The predicted values were calculated holding all covariates at their mean values.

Table 4 | Characteristics associated with prevalence and incidence of divorce among physicians

	Adjusted odds ratios (95% CI)	
Characteristics	Ever divorced	Divorced in past year
Age (years):		
25–39	1 (reference)	1 (reference)
40–50	5.79 (5.16 to 6.49)	1.87 (1.35 to 2.59)
51–60	28.0 (24.6 to 31.9)	1.84 (1.25 to 2.70)
>60	133 (112 to 158)	1.91 (1.17 to 3.11)
Race:		
White	1 (reference)	1 (reference)
Black	1.09 (0.92 to 1.28)	0.61 (0.32 to 1.17)
Hispanic	1.13 (0.99 to 1.30)	1.09 (0.67 to 1.78)
Other	0.43 (0.39 to 0.47)	0.56 (0.40 to 0.78)
Sex:		
Male	1 (reference)	1 (reference)
Female	1.51 (1.40 to 1.63)	1.46 (1.14 to 1.88)
Annual income ($):		
<50 000	1 (reference)	1 (reference)
50 000 to 99 999	1.00 (0.87 to 1.16)	0.93 (0.59 to 1.48)
100 000 to 149 999	1.07 (0.93 to 1.24)	1.24 (0.79 to 1.96)
150 000 to 199 999	1.06 (0.92 to 1.23)	1.02 (0.63 to 1.63)
>200 000	1.03 (0.90 to 1.17)	0.94 (0.60 to 1.46)
Hours worked a week:		
<39	1 (reference)	1 (reference)
40 to 49	1.02 (0.93 to 1.12)	1.41 (0.98 to 2.02)
50 to 59	0.86 (0.78 to 0.95)	1.36 (0.90 to 2.04)
>60	0.79 (0.72 to 0.87)	1.10 (0.76 to 1.61)

$1.00 (£0.66; €0.88).
Table reports adjusted odds ratios from multivariable logistic model of divorce (prevalence or incidence) as function of age, race, sex, annual income, hours worked a week, years since became married in most recent marriage, and state and year fixed effects. Predicted values were calculated holding all covariates at their mean values. Divorce prevalence is percentage of individuals who reported having ever been divorced at time of survey. Annual divorce incidence is the percentage of individuals who divorced in year previous to survey and can be interpreted as annual divorce rate.

common among those who were older. Female physicians had higher adjusted odds of being ever divorced or divorced in the past year compared with male physicians (adjusted odds ratio of being ever divorced 1.51 compared with males, 95% confidence interval 1.40 to 1.63; adjusted odds ratio of divorcing in past year 1.46 compared with males, 95% confidence interval 1.14 to 1.88). The adjusted odds of a physician being ever divorced or divorced in the past year were not consistently associated with annual income. The adjusted odds of being ever divorced decreased with weekly hours worked (for example, odds ratio of being ever divorced among physicians who worked more than 60 hours a week compared with those who worked less

than 39 hours was 0.79, 95% confidence interval 0.72 to 0.87). However, no association was noted between hours worked and the adjusted probability of divorcing in the past year. Confidence intervals around odds ratios in the model of divorce in the past year were generally larger than in the model of being ever divorced, owing to the much lower frequency of events in the former group.

Sex differences in effect of hours worked by physicians on divorce
The number of hours worked per week was positively associated with the probability of being ever divorced only among female physicians (table 5). Female physicians who worked more than 40 hours a week had a higher probability of being ever divorced compared with female physicians who worked less than 40 hours a week (for example, adjusted odds ratio 1.34 for female physicians working 40–49 hours a week compared with <40 hours, 95% confidence interval 1.16 to 1.54; adjusted odds ratio 1.16 for female physicians working 50 to 59 hours a week compared with <40 hours, 95% confidence interval 0.99 to 1.37). In contrast, male physicians who worked more than 40 hours a week had lower odds of being ever divorced than male physicians who worked less than 40 hours a week (adjusted odds ratio 0.77 for male physicians working 40–49 hours a week (95% confidence interval 0.68 to 0.88) and 0.66 (0.58 to 0.75) for male physicians working 50–59 hours a week, both compared with male physicians working <40 hours a week).

Discussion
The demanding nature of physicians' work has led to several historical investigations in the United States of whether divorce is more common among physicians than among other professionals. However, evidence on this has been dated, limited, and mixed.[8][9–11] Using large, nationally representative survey data collected by the US census from 2008 to 2013, we compared both the prevalence and incidence of divorce among physicians and other healthcare and non-healthcare professionals.

Our study had several findings. Firstly, divorce among US physicians is no more common than in other healthcare professions and non-healthcare professions. In fact, the prevalence and incidence of divorce among physicians were similar to pharmacists and

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Table 5 | Effect of hours worked on physician divorce, according to physician sex

Hours worked a week	Adjusted odds ratio of ever divorce (95% CI)	
	Men	Women
<39	1 (reference)	1 (reference)
40 to 49	0.77 (0.68 to 0.88)	1.34 (1.16 to 1.54)
50 to 59	0.66 (0.58 to 0.75)	1.16 (0.99 to 1.37)
>60	0.59 (0.52 to 0.67)	1.10 (0.93 to 1.28)

Table reports adjusted odds of physician divorce (prevalence and incidence) as function of hours worked a week. Results are from multivariable logistic model, which also adjusted for age, race, annual income, years since became married in most recent marriage, and state and year fixed effects. Separate models were estimated by physician sex. Predicted values were calculated holding all covariates at their mean values in each estimation sample. Divorce outcome is percentage of individuals who reported having ever been divorced at time of survey.

dentists and substantially lower than that of nurses, healthcare executives, lawyers, and other non-healthcare professionals. Despite evidence that professional obligations among physicians, including long and sometimes unpredictable work hours, may conflict with personal and family life,[1–3] we found no evidence that divorce among physicians was more common as a result. Secondly, female physicians were substantially more likely to be divorced than male physicians. Hours worked per week were positively correlated with divorce only for female physicians and not for male physicians, suggesting that differences in divorce rates between male and female physicians may be partly attributable to differential responses of divorce to hours worked.

Meaning of the study and relation to other studies of US healthcare professionals

Our findings of a lower prevalence and incidence of divorce among physicians compared with lawyers and other professionals not employed in healthcare mirror findings from analyses of 1970 and 1980 US census data reported more than two decades previously.[10] In that analysis, physicians were compared with lawyers with similar sociodemographic characteristics, including advanced education, comparatively high income, and later age at marriage. That analysis did not, however, compare divorce between physicians and other healthcare professionals who may face similar professional demands. In that respect we found physicians to be similarly likely to divorce as dentists and pharmacists but to have a lower prevalence of divorce than nurses and healthcare executives.

An important measure that we could not assess is the subjective evaluation of marital quality, which is distinct from proneness to divorce, which we assessed.[10 25 26] Several survey studies in the United States have evaluated marital quality among physicians and have examined factors associated with self reported marital quality, including hours worked, physician specialty area, practice setting, spousal occupation, and presence of children.[26–29] For example, in a US survey of 891 spouses of physicians, satisfaction was strongly independently associated with time spent awake with their physician partner and number of nights on call a week but was not associated with other professional characteristics such as total hours worked a week, specialty area, or practice setting.[29]

Our finding that female physicians are substantially more likely than male physicians to report being divorced raises important questions as to the origin of this association. In US surveys, female physicians on average report making greater professional adjustments than male physicians to accommodate for household responsibilities such as child rearing.[30] Greater trade-offs between professional obligations and family life may contribute to lower quality of relationships and higher prevalence of divorce among female physicians.[31 32] For example, in a US survey of 1043 female and 6815 male surgeons, female surgeons were substantially more likely to report having experienced a conflict with their spouse or partner's career (52.6% v 41.2%), more likely to report experiencing a work-home conflict in the three weeks preceding the survey being administered (62.2% v 48.5%), and more likely to report symptoms of burnout and depression.[2]

Our analysis also found a positive association between hours worked per week and divorce for female physicians. In contrast, hours worked per week were negatively associated with divorce for male physicians. This finding is consistent with previous evidence from the general American population that work hours of women are more highly positively correlated with divorce than are work hours of men.[24] Our finding that hours worked a week may have different impacts on divorce for female versus male physicians is consistent with evidence that female physicians report making greater trade-offs between professional and family obligations.[30–32] Although we studied the impact of number of hours worked on divorce, our analysis did not allow us to study the association of divorce with the structure of hours worked—for example, irregular shifts or night-time work—which in a previous study was associated with self reported marital dissatisfaction among spouses of physicians.[29]

Relation to international studies

We were unable to identify published studies exploring divorce among physicians and other healthcare professionals outside of the United States. However, several studies conducted internationally have explored rates of physician burnout and factors associated with well-being, and specifically explored sex differences in work-home conflict.[4 5 12–18] For example, in a survey of 1208 Norwegian physicians, work-home conflict was among the strongest predictors of burnout among female physicians but was not statistically significant among male physicians.[4] Similarly, in an analysis of multiple cohorts of newly qualified physicians in the United Kingdom between 1974 and 1993, 11.7% of male doctors were married compared with 21.5% of men in the general population, whereas only 14.1% of women doctors were married compared with 38.9% of women in the general population.[13] This study, while informative about sex differences in marriage formation among UK physicians, did not analyze rates of divorce. Finally, in a comparative analysis of sex differences in burnout among physicians in the United States compared with the Netherlands, US female physicians experienced more

burnout than US male physicians, whereas there was no sex difference in burnout among Dutch physicians. However, consistent with other studies, female physicians in both the United States and the Netherlands reported more work-home conflicts than did men, with the size of the sex difference twice as high in the United States as in the Netherlands.[5]

Strengths and weaknesses of this study

This study is the first in the past three decades to estimate the prevalence and incidence of divorce among US physicians using large, nationally representative data; to compare those estimates with other healthcare professionals, lawyers, and other non-healthcare professionals; and to analyze factors associated with divorce among physicians.

Our study has several limitations. Firstly, although the analysis of divorce rates across occupations lends itself to a hazard analysis (for example, Cox proportional hazards analysis of differences in divorce hazards across occupations), the census does not follow people longitudinally as it is a cross sectional survey of people. Future work should use hazard analysis to compare divorce rates of physicians with non-physicians in longitudinal data, which would allow for direct estimation of the differences across occupations in adjusted probability of divorce for people over time.

A second limitation is that divorce is an imperfect measure of marital satisfaction, the latter which we were unable to directly assess in our study. A comparison of marital satisfaction between physicians and other professionals may reveal differences that a comparison of divorce may not. Thirdly, the American community survey did not contain information on physician specialty. Although a failure to account for physician specialty would not affect our comparison of divorce between physicians and other professionals, there may be important differences in divorce among specialties. For example, in a previous study of medical school graduates from Johns Hopkins University, specialties such as psychiatry and surgery were found to have substantially higher rates of divorce than internal medicine, pediatrics, and pathology.[9] Fourthly, our data did not allow us to estimate the prevalence of divorce among dual-physician couples. Dual-physician couples have increased in prevalence, with several estimates suggesting that nearly half of all physicians are married to other physicians.[30 33 34] Dual-physician couples may also be more common among female physicians than among male physicians.[2 35] Marital satisfaction and divorce may differ between physicians who are married to other physicians and those who are not. For example, in a study of 7095 surgeons, surgeons in dual-physician couples reported greater difficulty balancing professional and personal obligations compared with surgeons whose spouse was not a physician.[33] In contrast, in a study of 1208 physicians, those in dual-physician couples reported an equivalent likelihood to non-physician couples of achieving both career and family goals.[30] Both groups also reported equivalent levels of

conflict between professional obligations and family roles. Although our data allowed us to identify spousal occupation, we could not analyze the prevalence of divorce among dual-physician couples because divorced people in the survey had no occupational data recorded for the previous spouse. Finally, our data were specific to the United States and may not generalize to divorce among healthcare professionals internationally, although some evidence exists that rates of burnout, which likely correlate with rates of divorce, may be similar between healthcare professionals in the United States and United Kingdom.[15 36]

Conclusion

Despite often reported conflicts between professional obligations and family life, we found no evidence that physicians in the United States have a higher prevalence or incidence of divorce than other healthcare and non-healthcare professionals. Female physicians and other female healthcare professionals are substantially more likely to be divorced than their male counterparts, an area that requires further investigation.

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