

Changes in Resident Work and Sleep Hours 1999 to 2009: Results From a Survey of 4 Specialties

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Introduction

Resident work hours have been a recurring source of concern and controversy for many years. From the Spartan origins of the Halsted generic model of the surgical service at Johns Hopkins in 1897 to the present, there have been major tensions between the educational needs of learners and the workload demands of patient care, resulting, at times, in classic labor-management confrontations about work hours and conditions.

Background

The first systematic reports of resident work hours began to emerge in the late 1960s and early 1970s. In 1979, the American Medical Association conducted its first national, multispecialty report on work hours.¹ Weekly work hours for residents in postgraduate year -1 (PGY-1) were reported as averaging 82.2 hours, with a nearly 10-hour drop for all higher-level residents. In their follow-up 1983 survey, the figure for PGY-1 was 84.7 hours weekly, and by 1987, it reached 87.5 hours.² Once again, there was a full 10-hour difference between the hours worked by PGY-1 residents and all other residents.

By 2000, concerns over the rising number of work hours and the emerging data on the effects of fatigue and sleep deprivation on medical errors and physician performance ignited demands for work hour limits, resulting in the establishment of an 80-hour limit for weekly work hours, along with a set of guidelines by the Accreditation Council for Graduate Medical Education (ACGME) in 2003.

Since 1988, we have been engaged in a major effort to track resident work and sleep hours, conducting lengthy

national, multispecialty surveys in 1989, 1999, and 2009. Each of these surveys has included a broad range of data concerning resident work and sleep hours, as well as data on learning, outside activities, stress, supervision, personal health, behavioral change, interprofessional conflict, impairment, and mistreatment.

The results of our multispecialty studies conducted in 1999 and 2009 show substantial changes in resident work and sleep hours during the past decade.

Methods

This report covers changes in self-reported work and sleep hours obtained from PGY-2 and PGY-3 residents in internal medicine, obstetrics and gynecology, pediatrics, and surgery in our 1999 and 2009 surveys. Methods and results of work and sleep hour data from the 1999 survey have been reported previously.^{3,4} The 1999 survey was mailed directly to a national, random sample of PGY-2 and PGY-3 residents, and information was requested regarding their prior year of training. Figures for the current report were derived from the 1999 data set for the 4 identified specialties. With a few new questions, the 2009 survey used the same questionnaire.

To study variations in individual residency experience within and between programs during the 10-year interval, we identified 27 institutions, representing wide differences in size, governance, and geographic distribution. Individual paper surveys were distributed to the residents in sealed envelopes at each institution and returned directly to the investigators. An electronic version of the survey was also available. Institutional Review Board approval was obtained.

Five of the institutions declined or failed to respond, and the participation of 7 others was deemed unacceptable for purposes of the research. The resulting sample consisted of 634 PGY-2 and PGY-3 residents in the 4 specialties, representing 36 individual programs at 15 institutions, with an overall response rate of 83.3%.

Results

The reported figures for 2009 indicate clearly that there have been significant changes in both work and sleep hours reported for the PGY-1 and PGY-2 resident years in these 4 specialties during the past decade. Figures for average weekly work hours declined significantly for each residency level in all of the 4 specialties, with those in surgery and obstetrics demonstrating the greatest declines (TABLE ,

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TABLE AVERAGE WEEKLY WORK AND SLEEP HOURS							
PGY	Specialty	Average Weekly Work Hours		Decrease in Work Hours 1999–2009	Average Weekly Sleep Hours		Increase in Sleep Hours 1999–2009
		1999, h (N)	2009, h (N)		1999, h (N)	2009, h (N)	
PGY-1	Internal medicine	83.7 (531)	73.9 (92)	9.8	40.7 (531)	43.9 (91)	3.2
	Ob/gyn	90.5 (95)	78.0 (34)	12.5	38.9 (95)	42.2 (34)	3.3
	Pediatrics	81.3 (220)	75.4 (104)	5.9	39.9 (220)	43.6 (104)	3.7
	Surgery	102.0 (146)	83.9 (48)	18.1	35.4 (146)	41.5 (48)	6.1
PGY-2	Internal medicine	77.1 (495)	70.2 (121)	6.9	42.0 (495)	46.0 (119)	4.0
	Ob/gyn	90.8 (90)	76.8 (43)	14.0	39.4 (90)	43.5 (41)	4.1
	Pediatrics	78.1 (218)	72.1 (121)	6.0	40.9 (218)	45.9 (119)	5.0
	Surgery	105.7 (105)	82.1 (57)	23.6	33.7 (105)	40.8 (57)	7.1

Abbreviations: OB/gyn, obstetrics and gynecology; PGY, postgraduate year.

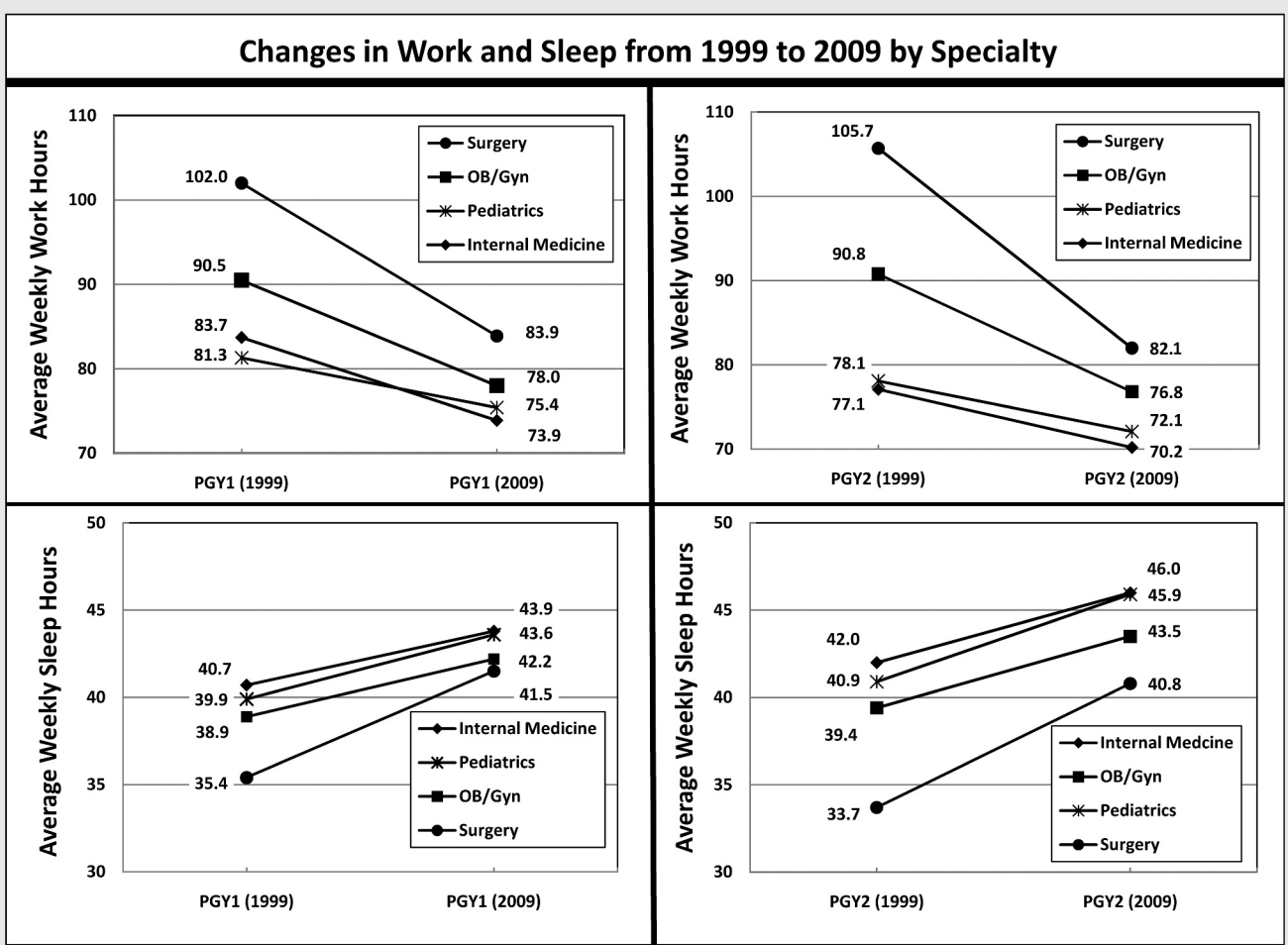


FIGURE CHANGES IN WORK AND SLEEP FROM 1999 TO 2009 BY SPECIALTY

FIGURE). Average PGY-1 weekly work hours, which were all above 80 hours in 1999, are now greatly below that figure, with the exception of surgery, which still evinces a slightly elevated figure, despite experiencing the largest hourly decline. Similar changes can be observed for average weekly work hours reported for the PGY-2 year, with even greater declines in the hours reported by both surgery and obstetric residents, bringing all of them below the 80-hour limit, except for surgery. In both resident years, there is a convergence of hourly figures, suggesting more uniformity of adherence to ACGME standards.

Figures for average weekly sleep hours likewise have changed substantially for both the PGY-1 and PGY-2 residents. Gains in hours of sleep have occurred uniformly across the board, with the greatest number being reported by surgery, nearly twice those for the other specialties (TABLE, FIGURE). It is of note that there is a convergence of sleep hours for both training years in the 2009 data, suggesting that around 6 hours per night appears to meet most residents' current needs for sleep. Also, the decline in work hours is greater than the increase in the number of hours residents actually report sleeping. We can only assume that this former work time that is not used for sleep allows residents to engage in other activities. This parallels our prior finding in the 1999 survey that although PGY-2 residents reported nearly an hour less work per day than did their PGY-1 colleagues—time that could have been used for

extra sleep—they used only an average of 13.8 minutes for sleep.^{3,4}

Conclusion

Comparisons of data from 2 multispecialty surveys in 1999 and 2009 reveal that residents in 4 major specialties are reporting substantially fewer weekly work hours than did residents in 1999, in apparent conformity with the 80-hour limits specified by the ACGME in 2003. Sizeable increases in weekly sleep hours are also reported by residents in these 4 specialties, as was hoped when work hours were reduced. The finding that not all the extra time now available is used for sleep, however, suggests that residents feel they are currently meeting their sleep needs and choosing to use the remaining gains in time for other activities.

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