Background: The increased proportion of female physicians over the last 30 years may have important implications for future physician workforce needs.

Objective: To assess the roles of gender, marital status, and parenting in employment choices.

Design, Setting, and Participants: Anonymous surveys were distributed to recent dermatology residency graduates taking a board examination review course from 1999 through 2002.

Main Outcome Measures: The number of hours respondents saw patients per week and the number of hours they spent in each field of dermatology per week.

Results: There were 191 respondents to the survey in 2002, which represented 54% of the 2002 residency graduates. For clarity, this article focuses on the 2002 results except where trends over time become apparent. Of the respondents, 57% were women and 43% were men. Women saw patients a mean of 26 hours per week while men saw patients a mean of 31 hours ($P = .01$), although women spent more time practicing medical dermatology. Marital status did not significantly affect the number of work hours. Men and women who were not parents worked almost the same number of hours per week, but male parents saw patients a greater number of hours than female parents (34 vs 24; $P < .01$). Men who were parents spent more hours per week seeing patients than men who were not. In contrast, women who were parents spent fewer hours seeing patients than women who were not.

Conclusion: Parenting, in combination with gender, greatly influences workforce choices for professionals with young families while gender alone has little impact on those choices.

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Over the last 30 years, there has been a dramatic change in the field of medicine. Women represented 10% of the entering medical school class in 1973 but 47.8% in 2001, and now make up almost 25% of all practicing physicians. By 2010 nearly 1 in 3 physicians in the United States will be female. Certain specialties are affected by this demographic change more than others, including pediatrics, obstetrics and gynecology, and dermatology—fields in which women comprise the majority of their residency classes.

Recent studies have shown that female physicians often choose to work fewer hours than their male colleagues, on average 7 to 15 fewer hours per week. While at least 1 report argues that gender has little impact on workforce forecasting, many analyses point toward the opposite conclusion. This forecasting is made more difficult by the fact that differences in work output are not only a function of hours, but also of productivity. If indeed women continue to enter the field of medicine in such a high proportion and continue to work fewer hours per week than men, the United States may soon have to adjust its physician workforce pool accordingly, a shift that becomes especially relevant for specialties in which women dominate. The reasons for this trend among female physicians have not been definitively determined.

There are several theories about the differential in work hours between men and women. Some have suggested that women from 2-income families may have more flexibility in the number of hours they work per week and thus can afford to work fewer hours. Others have argued that women tend to accommodate the career ambitions of their spouses by working fewer hours per week. In a national survey of office-based private practice physicians,
marital status had no effect on the number of work hours of male physicians whereas married women physicians worked fewer hours than their single colleagues.15

Female physicians may also choose to work fewer hours to spend more time raising their children.10,18 However, the evidence is equivocal. In a survey of office-based private practice physicians in the United States, women physicians with children worked the same number of hours as their childless colleagues.13 On the other hand, a recent study of Canadian physicians showed a nonsignificant trend toward female physicians with children working fewer hours than those without.8 Conversely, male physicians with children tended to work longer hours12 and were less likely than their female colleagues to decrease their hours worked per week.9 In a study of Ontario-based family physicians, men with children worked an average of 69 hours per week whereas their childless counterparts averaged 54 hours.19

Another important aspect to consider is physician productivity. Studies of physician populations in Western industrialized countries have shown that more women physicians work part-time than men.20,21 In the past, part-time physicians were thought to be less productive and provide lower quality care than full-time physicians. However, a recent retrospective cohort study found that part-time primary care physicians were no more productive than those of full-time primary care physicians (2.1 work relative units/bookable clinical hour vs 1.3 work relative units/bookable clinical hour; P < .01).22 Other studies report that women physicians spend more time with their patients than men23–25; and while no recent studies have looked at the relationship between gender and productivity, some older studies found that women saw fewer patients per hour than men.16,28 This has implications for both quality of care24,25,27 and physician supply issues.

As with the general physician population, there currently exist concerns about an impending workforce shortage among dermatologists—especially in medical dermatology.28–30 There is a paucity of data regarding the choices that male and female physicians currently make about careers. Furthermore, there is even less information available about what decisions they make immediately after their graduation from residency, a complex time that typically coincides with peak child-rearing years. The factors that influence workforce trends are critical to examine as they will certainly have an impact on the workforce supply in the future. This study examines some of the factors affecting workforce choices that recently graduated male and female dermatology residents are making, with a particular focus on how marital status and parenting influence these decisions.

### METHODS

#### POPULATION

An annual survey was administered between 1998 and 2002 to participants of the board examination review courses organized by Galderma Laboratories in August or September of each year. Owing to the events of September 11, 2001, the Galderma board review course was cancelled and thus 2001 data have not been included here. The anonymous survey instrument is exempt from institutional review board monitoring under Federal Register regulation 56 FR 28012, 28021, Subpart A, Section 97.101(b)(2).

#### STATISTICAL ANALYSIS

The percentages reported for each item are based on the valid number of responses to the item, which was sometimes less than the total number of respondents. The number of respondents has been included when the percentage of eligible respondents fell below 75%. When comparing discrete variables, chi² tests were performed to determine significance; t tests were used to determine significance when comparing continuous variables; and Mann-Whitney tests were also used for continuous variables after they had been divided into ranked groups to confirm significant differences. When looking at the significance of ordinal values, a chi² analysis was performed. The Bonferroni correction was implemented when more than 1 analysis was used on the same set of data. To determine sex predominance among the respondents, binomial tests were performed.

Multivariate regression analyses using analysis of variance were performed to determine whether there was a correlation between different subgroups when evaluating the number of hours spent with patients per week. Additionally, multiple linear regressions based on box plot modeling, with a second order interaction for the combination of parenting and gender, were performed. To determine if there was a trend in the gender composition of the respondents population over time, logistic regressions were performed for which nonzero coefficients were tested. Linear models were developed to determine trends over time for hours spent with patients per week. The statistical analysis was completed using statistical software SPSS 11.5 (SPSS Inc, Chicago, Ill) and R 1.6.2 (Boston, Mass).31

#### RESULTS

Of all individuals contacted for the 2002 workforce survey, 191 (66%) responded, including 54% of the 2002 dermatology residency graduates plus 49 fellows. Of those, 166 (89%) graduated from dermatology residency programs in 2002. In 1999, 223 participants (82%) responded as did 204 (76%) in 2000. For the sake of clarity, this article will focus on the 2002 results except where trends over time become apparent. Fellows and nonfellows will be considered together as there are no significant demographic differences between them.

In 2002, 109 (57%) of the 191 respondents were women (Figure 1). The mean age of male and female respondents was 33 and 34 years, respectively; 81 women (75%) and 52 men (64%) were married; 51 women (47%) and 28 men (37%) had children; the average number of children per parent was 1.6; and the mean age of children per family was 3.8 years.

Women saw patients a mean of 26 hours per week while men saw patients a mean of 31 hours (P = .01). While 46 men (61%) saw patients more than 30 hours per week, only 29 women (30%) saw patients more than 30 hours (P < .01). A surrogate value of mean total hours per week—defined as the mean of the sum of hours with patients per week and other hours of practice-related activity—has been calculated for all groups and subgroups and is reported in Table 1.
Even though female dermatologists worked fewer numbers of total hours, they spent more of their time involved in medical dermatology. Women spent a mean of 25 hours per week engaged in medical dermatology while men spent only 22 hours. Conversely, men spent 6 hours participating in Mohs surgery per week (n=52), compared with only 3 hours for women (n=51).

Marital status did not significantly affect the number of work hours. Married and nonmarried women saw patients the same number of mean hours per week (28 vs 26) as did married and nonmarried men (33 vs 30).

However, respondents reported that the employment status of their spouses had an impact on their work habits: 34 (65%) of the married male respondents reported that their spouses also worked, while 73 (95%) of the married female respondents had employed spouses (P=.01). Only 1 married man (2%) said that his spouse’s employment status caused him to decrease his work hours, but this was true of 13 married women (18%) (P=.01). In fact, 8 (15%) of the married men increased their work hours as a result of their spouses’ employment status (3 of their spouses were employed and 5 spouses were not). Only 7 married women (9%) did the same (4 had employed spouses, 2 had unemployed spouses, and 1 did not answer the question).

Gender differences become more apparent in the context of parenting (Table 2). Men and women who were not parents spent nearly the same numbers of hours with patients per week (29 vs 27; P=.43) but male parents saw patients more hours per week than female parents (34 vs 24; P=.01). Men who were parents spent more hours seeing patients per week than those who were not (34 vs 29). On the contrary, women who were parents spent fewer hours per week seeing patients than women who were not (24 vs 27). These trends persisted when looking at the mean number of total hours worked per week (defined as hours spent with patients plus other hours of practice-related activity) (Table 1).

Multivariate analyses were performed that included gender, parental status, marital status, and age when looking at the number of hours spent with patients per week. Only gender was found to have a significant effect; however, a box plot model suggested a possible interaction between gender and parental status. When a multiple linear regression was performed with a second-order interaction of the combination of gender and parental status, plus the individual factors of gender, parental status, marital status, and age, the combination of gender and parental status was the closest to being significant (P=.07), whereas none of the other factors approached significance (Table 3). This demonstrates that it is most likely the combination of gender and parenting that explains the differential in hours of patients seen per week. The reason that parental status was not significant in the first analysis was probably because of opposing trends in the number of hours of seeing patients per week when comparing male and female parents.

Thirty-two (70%) of the 46 female parents reported a decrease in their work hours because of child care responsibilities while only 3 (11%) of the 28 male parents did (P<.01). Four male parents (15%) reported an increase in work hours due to child care responsibilities but no female parent reported this phenomenon (P=.02).

The number of children also had a different impact on men and women regarding the number of hours worked per week. As the number of their children increased, women spent fewer hours with patients, although this finding was not statistically significant (Figure 2). Although male parents in general worked more hours than male nonparents, there was not a similar phenomenon when evaluating the number of children against the number of hours worked per week.

When considered over a 4-year period, trends in male and female dermatologists’ work choices also begin to emerge. Women consistently outnumber men in the recently graduating dermatology residency classes (Figure 1). Additionally, women’s average numbers of hours spent with patients per week are consistently lower than men’s (P<.01) (Table 2). Moreover, the number of hours per week both male and female dermatologists spent with patients decreased over the 4 years of this study (P<.01) (Table 2).

While the respondents’ mean age remained constant through the years (between 33 and 34 years), the...
percentage of men with children has steadily decreased ($P < .01$) (Table 4). Over time, men with children are working more hours than men without, although this is not a statistically significant trend (Table 2). Conversely, women with children consistently work fewer hours than women without; this trend has been stable throughout our survey years (Table 2).

This study attempts to better understand workforce needs in dermatology and to examine how gender and parent-

Table 2. Number of Respondents and Number of Hours Respondents Spent Seeing Patients

<table>
<thead>
<tr>
<th>Year of Survey</th>
<th>No. of Hours Worked* (No. of Respondents)</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All†</td>
<td>Parents</td>
<td>Nonparents</td>
</tr>
<tr>
<td>1999</td>
<td>34 (101)</td>
<td>33 (53)</td>
<td>36 (48)</td>
</tr>
<tr>
<td>2000</td>
<td>31 (82)</td>
<td>31 (38)</td>
<td>30 (46)</td>
</tr>
<tr>
<td>2002</td>
<td>31 (75)</td>
<td>34 (26)</td>
<td>29 (49)</td>
</tr>
</tbody>
</table>

*Numbers of hours are given as means.
† The sum of parent and nonparent respondents does not always equal the number in the “All” column because all respondents did not answer the question on parental status.

Table 3. Multiple Linear Regression of Number of Hours per Week Spent Seeing Patients, Including Second-Order Interaction Between Parental Status and Gender

<table>
<thead>
<tr>
<th></th>
<th>Estimate (SE)</th>
<th>t Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>33.81 (8.49)</td>
<td>3.98</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Sex</td>
<td>−2.17 (2.56)</td>
<td>−0.85</td>
<td>.40</td>
</tr>
<tr>
<td>Age</td>
<td>−0.14 (0.25)</td>
<td>−0.57</td>
<td>.57</td>
</tr>
<tr>
<td>Marital status</td>
<td>−0.03 (2.34)</td>
<td>−0.01</td>
<td>.99</td>
</tr>
<tr>
<td>Parental status</td>
<td>4.99 (3.46)</td>
<td>1.44</td>
<td>.15</td>
</tr>
<tr>
<td>Interaction between gender</td>
<td>−7.63 (4.14)</td>
<td>−1.84</td>
<td>.07</td>
</tr>
</tbody>
</table>

Table 4. Graduates With Children

<table>
<thead>
<tr>
<th>Year of Survey</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>55 (52)</td>
<td>47 (40)</td>
</tr>
<tr>
<td>2000</td>
<td>38 (43)</td>
<td>38 (34)</td>
</tr>
<tr>
<td>2002</td>
<td>28 (33)</td>
<td>51 (46)</td>
</tr>
</tbody>
</table>

Figure 2. Men and women dermatologists’ mean number of hours spent with patients per week relative to their number of children.

This study attempts to better understand workforce needs in dermatology and to examine how gender and parent-

ing affect dermatologists’ employment choices. While dermatology is a specialty with generally reasonable practice hours, women dermatologists—especially those with children—are nevertheless reducing their work hours more than men. Based on data from the entire dermatologist population, in which dermatologists see patients an average of 32 hours per week, female dermatologists are decreasing their work hours by approximately 15% of full-time equivalents. This phenomenon may be universal among women in medicine.

Our study confirms that, on average, women dermatologists are seeing patients fewer hours per week than men—a difference largely determined by parental status. Interestingly, the actual number of hours spent practicing medical dermatology, where the shortage of hours is believed to be the most acute, is roughly equal between sexes, with a trend toward women working more in this area.

While marital status seems to have little effect on the number of work hours, parenting creates a significant dividing line between men and women when their work choices are considered. Whereas male and female dermatologists who are not parents work nearly the same number of hours per week, women who are parents work a number of hours significantly less than the average. Alternatively, men with children increase their work hours compared with their childless counterparts. This may be secondary to a need for increased income as children are added to the family.

While the data are biased by the fact that the surveys only assess individuals taking a specific board review course, they provide information about a majority of the graduating dermatology residents (66% in 1999, 56% in 2000, and 54% in 2002) and about many of the fellows, most of whom are entering the workforce. An advantage to surveying this group is that it uncovers choices dermatologists make during peak childbearing
and child-rearing years. These findings are also consistent with survey results from the general dermatologist population, as discussed below.32

Limitations to the study include that it only examines new entrants to the field of dermatology, and only those who have chosen to participate in a board review class. One other confounding factor is that we survey our target group when they are studying for the board examination, a time in which many tend to decrease their work hours. Another weakness of this study is that respondents are self-reporting their work hours and there is no available means to validate their responses. It is possible that there are gender differences in the accuracy of self-reported numbers of hours worked. Further research is needed to assess (1) how many actual patients are seen per hour (physician productivity); (2) the total length of one’s career (considering leaves of absence and retirement age); (3) how a spouse’s income affects the number of work hours; and (4) whether these work patterns, considered secondary to demographic factors such as marriage and parenting, are representative of trends in the general dermatology workforce.

The data concerning work hours presented in this article are generally consistent with results from an American Academy of Dermatology–administered survey13–15 sent to all practicing dermatologists (1425 [34.8%] of 4090 individuals responded). While women are in the majority in the population of recently graduated dermatologists, in the overall American Academy of Dermatology study 70% of the respondents were men and 30% were women (P<.01). Female dermatologists, on average, are younger than male dermatologists (45 vs 52 years old; P<.01). Furthermore, 77% of women and 45% of men dermatologists were 50 years or younger (P<.01).

Women dermatologists responding to this survey are seeing patients fewer hours per week than men (28 vs 34; P<.01). The average number of patients seen per week is also weighted toward the men (men vs women, 152 vs 116; P<.01). Thus, men see 4.65 patients per hour while women see 4.30 patients (P<.01).

Women dermatologists older than 50 years see patients more hours per week than women 50 years and younger (31 vs 28; P = .01). It is unclear if this describes work trends as women age—getting past the childbearing and child-rearing years—or whether this is a phenomenon attributable to generational differences. Further studies need to be performed over time to help explain work trends as dermatologists age. Even though older women work more hours than younger women, they are still working less than men from their same age group. Men older than 50 years still spend more time seeing patients per week, on average, than women in the same age group (33 vs 31; P = .03). Questions regarding marital status and parental status were not included in the American Academy of Dermatology survey and thus comparisons cannot be made between the current residents and the larger dermatologist population when assessing these parameters.

Parenting, in combination with gender, influences workforce choices for professionals with young families, while gender alone has little significant impact. As is true in many other careers, women appear to still carry more of the child-rearing responsibilities,33,34 whereas men should shoulder more of the economic obligations in the family structure.16 While these trends may not persist for the duration of an individual’s career, at the complicated time of graduation from residency (eg, studying for board examinations, starting new jobs, being married, having and raising young children), these factors play a critical role in how employment decisions are made.

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REFERENCES


The article by Lee titled “Combination 532-nm and 1064-nm Lasers for Noninvasive Skin Rejuvenation and Toning,” published in the October ARCHIVES (2003;139:1265-1276), had figures and portions of the text previously published in Seminars in Cutaneous Medicine and Surgery (2002;21:288-300). The difference in publication schedules of the 2 journals allowed the material to be published in Seminars first. The article in the ARCHIVES did not refer to the previously published work because the author was unable to determine which article would be published first when the manuscript was submitted.