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# Characteristics of Community-Based Primary Care Physicians Participating in Research

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**Background.** Participation of community-based primary care practitioners in practice-based research has been encouraged for several years. The purpose of this study was to examine characteristics related to community-based primary care physician participation in research activities.

**Methods.** This study is a secondary analysis of the survey "Practice Patterns of Young Physicians, 1987: United States," which was originally conducted by the American Medical Association. The respondents were full-time primary care physicians (family or general practice, pediatrics, general internal medicine) who were not employed by a medical school or a university (N=1713).

**Results.** Seven percent of practitioners not affiliated with a medical school reported spending at least some time during the previous week conducting medical research. Among community-based physicians with faculty appointments, only 20% spend any time engaged in re-

search activities during the same time frame. Among community-based practitioners affiliated with a medical school, researchers saw significantly fewer patients per week than did nonresearchers. However, there was no difference between researchers and nonresearchers in terms of specialty, total weekly work hours, or annual income.

**Conclusions.** Based on the data used in this analysis, only a small proportion of community-based primary care physicians participate in research. Physicians affiliated with medical schools conducted research at nearly three times the rate of unaffiliated physicians. However, participation in research activities had little impact on community physicians' workload or income.

**Key words.** Research; practice-based research; physicians, family; physician practice patterns. (*J Fam Pract* 1995; 40:51-56)

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In recent years, a variety of organizations and individuals have promoted the benefits of practice-based research and encouraged primary care physicians to participate in research.<sup>1-3</sup> The desire for practice-based research is motivated by the contention that research conducted in academic settings is far removed from the reality of day-to-day clinical practice. Although much of the discussion regarding practice-based research concerns encouraging primary care physicians to join and successfully participate in practice-based research networks,<sup>4-6</sup> little attention has

been focused on the factors inhibiting or facilitating individual participation in research.

Hueston<sup>7</sup> argued that among academic family physicians, the amount of time faculty members dedicate to research is related to their interest in doing research. A desire or interest in conducting research may be superseded by other requirements of the community-based physician's time, thereby limiting the amount of time available for research. For example, investigations focusing on academic family physicians who completed faculty development fellowships indicated that although the graduates had gained research skills sufficient to adequately conduct research, administrative and patient care requirements of their positions interfered with their ability to conduct research.<sup>8,9</sup>

Among community-based physicians without allocated time for research, other practice characteristics may

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exert considerable influence on conducting practice-based research. Not surprisingly, clinical workload has been suggested as a variable that affects the physician's ability to conduct research.<sup>10,11</sup> If conducting research displaces time spent on clinical responsibilities, the community practitioner will lose income. Alternatively, if research activities are added to the clinical workload, the amount of time available for personal pursuits, such as family time, will be reduced. A greater understanding of how community-based physicians who participate in research balance their clinical duties, personal responsibilities, and research interests might be valuable to those who wish to recruit community practitioners into organized research efforts.

The purpose of this study was to examine factors associated with the participation of community-based primary care physicians in research. In particular, workload, income, and family characteristics were examined.

## Methods

The data analyzed in this study are from the survey "Practice Patterns of Young Physicians, 1987: United States," which was conducted by the American Medical Association (AMA) Education and Research Foundation.<sup>12</sup> The telephone survey using 42 interviewers and a computer-assisted telephone interviewing system collected data from a sample of all US physicians, regardless of AMA membership, who were less than 40 years of age and who had completed their residencies between 1 and 6 years before. The structured questionnaire allowed respondents to report on a variety of issues, with complex skip and branching patterns, providing data on more than 800 questions.

Of the total population of 68,351 individuals identified in the AMA Physician Masterfile, 41% were in the primary care specialties of general/family practice, general internal medicine, or pediatrics. The survey was distributed to a simple random sample of physicians with a minority oversample of black and Hispanic physicians. The survey response rate of 63% accounts for physicians who were ineligible, refused, or were unable to be contacted. Completed interviews were obtained from 5865 physicians, 38% of whom were in primary care.

In the present study, only data from primary care physicians were analyzed. Primary care physicians were defined as those in general or family practice, general internal medicine, or pediatrics. In an effort to limit the analysis to full-time workers, only the respondents reporting working more than 35 hours per week were included in the investigation.

The investigation focused on two groups of community-based primary care physicians who exemplified a continuum of interest and expectation for research. The first group was composed of medical school faculty members who reported not being employed by a university or medical school. This affiliated group included individuals with voluntary faculty appointments and those who were faculty at community residency programs. The second group included individuals with no medical school affiliation (ie, neither faculty appointment nor medical school employment).

Because of the multiple subsetting of the sample and the focus on a particular subgroup, the analyses were not weighted with a population-weighting coefficient.

## Variables

Research activity was measured according to an item asking how many hours in the last complete week of practice the physician had spent conducting medical research. This variable was dichotomized into those who spent some time doing research (1 or more hours) and those who spent no time doing research in the last week. Among those who spent some time doing research, the time spent doing research was analyzed as a continuous variable.

Workload was measured in several ways. First, each respondent was asked to provide the number of hours worked in the last complete week of practice. Because individuals could be involved in several practices, the analyses were limited to individuals who reported working in only one practice. Second, each physician was asked how many hours in the most recent complete week of practice he or she spent providing patient care, including paperwork, employee supervision, and other activities related to patient care. Third, after-hours workload was measured by the proportion of total patient care time (in hours) the physician spent seeing patients at night or on weekends during the most recent complete week of practice. Fourth and finally, the physician was asked to report the number of patients seen in the most recent complete week of practice, and the number of weeks worked in the previous year.

Income was measured as the total annual income after expenses but before taxes. Physicians were dichotomized according to whether they were owners or employees of the practice.

Family variables included marital status, and presence of a child younger than age 6 living in the household.

Demographic variables included sex, race, age, board certification in the individual's specialty, and county of residence (rural or metropolitan).

Table 1. Characteristics of Medical-School-Affiliated Primary Care Physicians, According to Participation in Research

Characteristic	Researchers (n=97)	Nonresearchers (n=380)	P Value
<b>Workload</b>			
Mean total hours worked per week (SD)	59.6 (12.0)	59.0 (14.5)	NS
Median hours worked after-hours per week	6	8	.03
Mean number of patients per week (SD)	65.2 (45.7)	101.4 (53.8)	<.001
Mean weeks worked in a year (SD)	47.1 (2.6)	47.4 (4.4)	NS
<b>Financial</b>			
Practice owner, %	26	54	<.001
Median annual income, \$	65,000	65,000	NS
<b>Family</b>			
Married, %	78	85	NS
Children under age 6 in the house, %	56	65	NS
<b>Demographics</b>			
Male, %	70	74	NS
White, %	79	86	NS
Rural residence, %	7	11	NS
Board certified, %	93	77	.001
Mean age (SD), y	35.1 (2.4)	33.9 (2.4)	<.001

NOTE: Data from the American Medical Association Education and Research Foundation, 1987.<sup>1,2</sup>

## Analysis

Because the two groups of practitioners (affiliated and unaffiliated) were conceptualized to be different in a variety of ways, the subgroups were examined separately. Student's *t* tests were computed for the relationship between research participation and interval level characteristics. Chi-square analysis was used for the relationship between research participation and categorical level variables. Differences in income between those who conduct research and those who do not were examined by means of a two-sample median test. Following an examination of the distribution of after-hours workload, it was determined that since the distribution was skewed significantly, it would be inappropriate to assume that it was a normal distribution. Consequently, the nonparametric statistic of a two-sample median test was computed for after-hours workload. Similarly, two-sample median tests were used to compare the number of hours per week spent conducting research.

Because of the multiple comparisons made between the groups of individuals conducting research and those not conducting research, the likelihood of observing a statistically significant difference at  $P < .05$  was increased. Consequently, an adjustment was made in what level would be considered statistically significant. A Bonferroni correction for the 13 comparisons in each table would suggest a significance level of  $P < .004$ .<sup>13</sup> Although this correction tends to be overconservative when more than 8 to 10 comparisons are involved, statistical significance was defined as  $P < .004$ .

## Results

The sample included 1713 primary care physicians. In terms of the medical specialties of the sample, 731 (43%) were general/family physicians, 574 (34%) were general internists, and 408 (24%) were pediatricians. The sample was composed of 477 primary care physicians who had a medical school faculty appointment but did not identify their place of employment as a medical school or university, and 1236 primary care physicians who had no medical school affiliation.

Twenty percent of those with medical school affiliations and 7% of community practitioners reported spending 1 or more hours during the previous week conducting medical research. Individuals within the medical-school-affiliated group who conducted research reported spending a mean of 10.5 (standard deviation [SD], 12.7) and a median of 5 hours per week on research, whereas community practitioners reported spending a mean of 11.1 (SD, 15.4) and a median of 5 hours per week conducting research.

Differences in characteristics among medical-school-affiliated primary care physicians according to participation in research are presented in Table 1. Physicians who participated in research were younger, saw fewer patients, were more likely to be board certified, and less likely to be an owner or part owner of their practice. The groups were not significantly different in terms of income, family variables, or residence in a rural area.

A comparison of the characteristics of unaffiliated primary care physicians indicates that no variables were

Table 2. Characteristics of Unaffiliated Primary Care Physicians, According to Participation in Research

Characteristic	Researchers (n=89)	Nonresearchers (n=1147)	P Value
<b>Workload</b>			
Mean total hours worked per week (SD)	61.0 (16.3)	58.8 (14.6)	NS
Median hours worked after-hours per week	8	10	NS
Mean number of patients per week (SD)	92.1 (55.9)	105.3 (48.3)	.02
Mean weeks worked in a year (SD)	47.7 (2.5)	47.8 (4.6)	NS
<b>Financial</b>			
Practice owner, %	54	56	NS
Median annual income, \$	60,000	60,000	NS
<b>Family</b>			
Married, %	77	82	NS
Have children under age 6 in the house, %	54	60	NS
<b>Demographics</b>			
Male, %	82	75	NS
White, %	75	77	NS
Rural residence, %	25	28	NS
Board certified, %	61	64	NS
Mean age, y (SD)	34.1 (2.5)	33.9 (2.5)	NS

NOTE: Data from the American Medical Association Education and Research Foundation, 1987.<sup>12</sup>

significantly different between the researchers and the nonresearchers (Table 2). The proportions of family practitioners, general internists, and pediatricians who participated in research are shown in Table 3. Among affiliated primary care physicians, family practitioners were not significantly different from either general internists ( $P=.05$ ) or pediatricians ( $P=NS$ ) in the proportion participating in medical research. Similarly, unaffiliated family practitioners were not significantly different from either general internists ( $P=NS$ ) or pediatricians ( $P=NS$ ). Regarding participation in research, there were no differences between either the proportion of affiliated general internists and pediatricians ( $P=NS$ ) or the proportion of unaffiliated general internists and pediatricians ( $P=NS$ ). Among those who reported doing research, the median number of hours per week that affiliated and unaffiliated primary care physicians spent conducting medical research is presented, according to specialty, in Table 4. Using a significance level of  $P<.05$ , none of the specialties were significantly different, regardless of affiliation status.

Table 3. Percentage of University-Affiliated and Unaffiliated Primary Care Physicians Participating in Research, by Specialty

	% of Physicians Participating in Research		
	Family Practice (n=731)	General Internal Medicine (n=574)	Pediatrics (n=408)
University-affiliated	15	23	23
Unaffiliated	7	6	9

NOTE: Data from the American Medical Association Education and Research Foundation, 1987.<sup>12</sup>

## Discussion

The results of this study indicate that a small number of young community-based primary care physicians participate in research activities. Among practitioners not affiliated with a medical school, 7% spent some time during the previous week conducting research. Even among community-based physicians who have faculty appointments, only one in five spend any time engaged in research activities. Since practice-based research is a goal for primary care physicians,<sup>1,3</sup> the small proportion of community physicians participating in research illustrates the work yet to be done in promoting research.

These data, however, provide some direction for those who hope to promote practice-based research. The present findings are important because they identify characteristics that distinguish researchers from nonresearchers. Although the researchers tended to see fewer patients per week, they did not work significantly fewer hours per week than did nonresearchers. Among the group of prac-

Table 4. Median Hours per Week Spent Conducting Research Among University-Affiliated and Unaffiliated Primary Care Physicians, by Specialty

	Median Hours per Week Spent Conducting Research		
	Family Practice (n=731)	General Internal Medicine (n=574)	Pediatrics (n=408)
University-affiliated	5	5	10
Unaffiliated	5	5	5

NOTE: Data from the American Medical Association Education and Research Foundation, 1987.<sup>12</sup>

tioners affiliated with a medical school, the findings may be a result of the researchers having some protected time for research: that is, these faculty members are likely to be integrated into a teaching program that allocates time for administrative, educational, and research responsibilities in addition to patient care duties. Researchers were more likely than nonresearchers to be employees, suggesting that their employers may have dictated a lower proportion of clinical time within their total weekly workload, leaving time for research.

In the unaffiliated group, researchers were not significantly different from nonresearchers in terms of workload or owner or employer status. Among these individuals, the few who conducted research may be organizing their workload to accommodate a personal interest in research activities. The nonmedical-school-affiliated researchers saw an average of 28 more patients per week than did the medical-school-affiliated researchers. Hueston<sup>7</sup> suggested that interest in research seems to be associated with time allocation for research. The affiliated group may have chosen a position based on the institutional interest in, and corresponding time allocated for, research associated with it, whereas the unaffiliated group may have been interested in doing research and arranged their workload so that they could pursue that interest.

Although the researchers and nonresearchers differ in terms of number of work hours, there is no difference between the groups in terms of median annual income. This finding seems to substantiate the contention that, among practitioners with faculty appointments, researchers may not be penalized economically for conducting research but rather may have chosen a job that is compatible with their interest in conducting research.

As physicians' income needs increase, research time faces a growing competition with clinical responsibilities.<sup>10</sup> In general, though, we found that when practicing physicians are involved in research, they are not spending a great number of additional hours working, and are not usually suffering financial hardships as a result of their interest in research. Among the nonaffiliated practitioners, the small number who choose to conduct research may be the few who have both the interest and the clinical income conducive to spending a portion of their time participating in research.

It would seem that familial relationships would motivate a practitioner to maximize the amount of nonwork time available for family interaction. In our analysis, however, marital status and presence of a young child in the home were variables that did not significantly distinguish researchers from nonresearchers. This finding indicates that the total number of hours worked per week is not significantly different between researchers and nonresearchers, thereby suggesting that incorporating research

into a physician's workload represents a redistribution of current responsibilities rather than an additional activity.

Family physicians were not significantly more likely to spend time conducting medical research than other primary care physicians. Particularly among unaffiliated practitioners, all three of the primary care specialties had similar proportions of physicians conducting research. Given the commitment of organizations such as the American Academy of Family Physicians to increase the number of community-based family physicians doing research, this finding indicates there is much room for improvement in the campaign to recruit practitioners into the ranks of researchers, suggesting a reevaluation of either the message intended to encourage research participation or its mode of delivery.

The results of this study have several implications for practice-based research by community primary care physicians. First, the interest level of practitioners in doing research seems to be related to whether they conduct research. Consequently, if the desire of organizations like the American Academy of Family Physicians<sup>1</sup> is to involve more community physicians in practice-based research, participation in research must be presented more appealingly to the average community practitioner. Practice-based research networks have tried to include community members in the selection of research questions<sup>14</sup> so that the questions generated are more interesting and applicable to physicians in the community rather than simply representing the efforts of academic medical centers looking for physicians in clinical settings to conduct their research. Second, both the absolute number and relative proportion of community practitioners participating in research may be limited by economics. The number of physicians interested in participating in research may be limited by the number of practices that allow the pursuit of research without economical or familial repercussions, ie, seeing fewer patients or missing out on family time as a result of additional time required to conduct research.

The present study has several limitations that affect the generalizability of these findings. Since the physicians surveyed were a group of young physicians who, having just recently emerged from a structured learning environment, might be more receptive to research, this survey may overestimate the percentage of physicians currently engaged in research. The factors related to research activities in this study may not apply to more experienced physician populations. Along with concerns about the limited age range of participants, the response rate of 63% may indicate a bias: individuals who participated in the survey may be more likely to spend time conducting research, thereby resulting in an overestimation of the proportion of community-based physicians actually conducting research. Another potential limitation is that the data

are self-reports of physician behavior and characteristics. Because the questionnaire did not define time "spent conducting medical research," respondents' answers may vary according to their own definitions of what constitutes research. No external validation was available for the data supplied by the respondents, including the variable assessing participation in medical research. The data used in this analysis are from 1987, and thus may not be totally representative of current income and research participation. With the inauguration of several practice-based research networks in recent years,<sup>4</sup> research participation by practicing physicians may have changed substantially since the survey. The current and increasing shift of primary care physicians to managed care programs also may significantly influence participation in research activities because of the potential of managed care organizations not to consider research as a contributor to the financial bottom line of the organization.

The research activities of community-based physicians have become more important as primary care specialties embrace practice-based research.<sup>15,16</sup> Several practice-based research networks have been formed to tap into the pool of community-based physicians.<sup>17-19</sup> Although some have cautioned against the endorsement of these networks until their value is better defined,<sup>20</sup> practice-based research networks appear to be gaining in number<sup>21</sup> and success.<sup>15</sup> In addition to harnessing the manpower needed to perform practice-based studies, the real value of these networks may lie in their ability to involve community-based physicians in framing research questions.<sup>22</sup> While this study suggests that only a small minority of young community-based physicians were engaged in research in 1987, those who participated in research appeared to find that it had little impact on their workload or income. These findings should be useful to academicians as they attempt to stimulate additional community-based research or to recruit members for blossoming networks.

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