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The Impact of Working Part-Time on Measures of Academic Productivity Among General Internists

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Abstract

Background: There is increased interest in part-time (PT) positions at academic medical centers (AMCs). Faculty and institutional leaders may have concerns about the potential for academic advancement among PT faculty. Our objective was to determine the impact of working PT on measures of academic productivity.

Methods: A cross-sectional survey was mailed to PT and full-time (FT) physicians in U.S. divisions of general internal medicine. Outcome measures included publications and funding. We used multivariate analysis to identify factors associated with academic productivity.

Results: The response rate was 63% (176 of 279); 91% of respondents were women (160 of 176). Compared with FT faculty, PT faculty were more often clinicians (Cs) or clinician-educators (CEs) (78% vs. 96%, p < 0.001), were less likely to be fellowship trained (44% vs. 23%, p < 0.001), and reported less academic support, including administrative assistance (84% vs. 67%, p = 0.008), mentoring (71% vs. 54%, p = 0.02), and research support (43% vs. 25%, p = 0.01). PT faculty spent a greater percentage of their time in patient care (55% vs. 45%, p = 0.01) and teaching (32% vs. 23%, p = 0.01) and less time in research activities (5% vs. 15%, p = 0.01) compared with FT faculty. Among Cs and CE, FT faculty reported more publications (median 2, interquartile range [IQR] 5 vs. median 0, IQR 1), and PT faculty reported more publications (odds ratio [OR] 2.85, 95% confidence interval [CI] 1.36-5.98). Multivariate analyses showed that fellowship training, mentors, academic support, and number of total years worked were associated with publications and acquisition of funding. There were no associations between working PT and publications or funding.

Conclusions: PT faculty report fewer publications and grants. This may be related to insufficient training and academic support. AMCs wanting to facilitate the success of their PT faculty may need to expand the support available to them.

Introduction

At academic medical centers (AMCs), there has been increased interest in part-time (PT) positions wherein faculty work solely at the institution (without major outside professional commitments) at a reduced full-time equivalent (FTE), also described as PT full professional effort (FPE).¹⁻³

Eleven percent of members of a large, national academic general Internal Medicine organization report working less than full-time (FT).³ Most PT FPE are women³⁻⁶; PT work options may allow faculty with family responsibilities and those looking forward to retirement to better integrate their personal and professional roles.⁶⁻⁹ AMCs that provide PT opportunities may be able to recruit and retain talented junior and senior faculty, promote diversity, and respond strategi-ically to the changing demographics of the profession.¹⁰⁻¹³

In prior studies, PT physicians have reported less stress, lower burnout rates, and higher work satisfaction when compared to their FT counterparts.¹⁶⁻¹⁸ Research has also shown that patients of PT physicians receive comparable or higher quality of care and report satisfaction levels similar to those of patients of FT physicians.¹⁹,²⁰ Although it appears that PT work may have a positive impact on patient and physician outcomes, little is known about the academic consequences of PT positions. For example, the impact of factors associated with academic success, such as mentoring, fellowship training, and academic support, may vary among PT faculty compared with FT faculty.

Traditionally, success in academic medicine has required a more intense commitment early in one’s career, a time when junior faculty, especially women, may wish to work PT.²¹,²² Institutional and academic leaders are concerned about the

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potential for success among PT faculty. Because no studies have rigorously shown PT work to be a detriment to academic advancement, we sought to understand the impact of working PT on the academic productivity of faculty in divisions of General Internal Medicine (GIM) at AMCs.

Materials and Methods

Study design and sample

Between March and June 2005, we conducted a cross-sectional survey of PT and FT physicians in divisions of GIM at U.S. AMCs. Physician faculty who work <1.0 FTE but who provide their FPE to an academic institution were considered PT. No national listing of PT FPE faculty exists; therefore, we used a convenience sample. PT faculty were identified through the Society of General Internal Medicine Part-Time Careers Interest Group and the Association of Chiefs in General Internal Medicine. Because PT faculty in GIM represent a small number of all faculty and are predominately female, PT survey participants were asked to name FT faculty in their divisions who were similar to them in terms of age and sex as potential matches.

Development of survey instrument and data collection

The self-administered anonymous questionnaire collected data on personal and professional characteristics, hours worked, academic productivity and support, and attitudes about PT work. PT faculty were asked additional questions specifically about their PT work experiences, such as how long they had worked PT and if they had worked FT in the past. To enhance content validity, the survey was developed using the existing literature on PT work in medicine and academic advancement. Piloting of the survey was performed on several PT and FT faculty in GIM and other medical specialties and modified based on their feedback. Responses were in the form of multiple choice, short answer, yes-or-no questions, and Likert scales. After identifying 140 PT and 139 FT faculty for the study, up to three mailings and e-mail reminders were sent to encourage full participation. The study was approved by the Johns Hopkins Medical Institutions Review Board.

Statistical analysis

We used descriptive statistics to compare PT and FT faculty and performed subgroup analyses by rank (Instructor and Assistant Professors, Associate and Full Professors) and role (clinician [C], clinician-educator [CE], and clinician-investigator [CI]). The number of CIs in our sample was small. The majority of respondents identified themselves as Cs or CEs; therefore, we combined these groups (now referred to as CEs) and focused our analysis on the factors associated with academic success for CEs.

The hours worked per week and the number of publications reported by PT and FT faculty were not normally distributed, and results are presented as medians and interquartile ranges (IQRs). We used t tests to compare means, chi-square for comparisons of proportions, and Wilcoxon rank sum tests to compare nonnormally distributed responses between PT and FT faculty.

Measures of academic productivity

We compared two measures of academic productivity for PT and FT faculty: number of publications and having received funding for research or other scholarly work. Participants were asked to include only first and last author publications, as these are important indicators for promotion. We dichotomized number of publications as 0 publications vs. ≥1. We chose this cutoff based on the distribution of the data and because General Internists and CEs report fewer peer-reviewed publications than subspecialists and CIs. Funding sources were specified as extramural (federal, state, foundation, or commercial) and intramural grants. PT faculty were specifically asked to report on publications and funding that had occurred while working less than FT.

Predictors of academic productivity

Respondents were asked a series of questions about academic support available to them at their institution and that they had used. These included administrative support, medical informatics, grant writing support, faculty mentors, and statistical support. We also asked if the respondent had completed fellowship training.

Full-time year equivalent

We controlled for work effort to determine if differences in number of publications or receipt of funding between PT and FT faculty might be explained by total years on faculty or percent FTE. To control for the relative duration of employment in a faculty position, we created a variable: full-time year equivalent. For PT faculty, full-time year equivalent was calculated using the following equation:

\[
\text{Full-time year equivalent} = \text{number of years full-time} + (\text{number of years part-time} \times \text{current FTE})
\]

Multivariate analysis

We performed two multivariate regression analyses to determine which factors were independently associated with measures of academic productivity among CEs. The outcome variables were number of publications (0 vs. ≥1) and having received funding for research or scholarly work (yes vs. no). Predictor variables included factors believed to be associated with academic success. Variables included in the modeling were gender, marital status, number of children, fellowship training, rank, total hours worked per week, administrative assistance, mentoring, and research/statistical support. We also included PT status and full-time year equivalent. Because of colinearity with other variables, rank, hours worked each week, and research/statistical support were excluded from the final models. We also excluded gender from the final model because the vast majority of respondents were female and inclusion of this variable in the model did not change the associations. An interaction term for fellowship training and mentoring support was included in the analysis, and no significant interaction was found. We used the Hosmer-Lemeshow goodness-of-fit test for all models. Data were analyzed using STATA version 8 (College Station, TX).
Results

Response rate

Of the 140 PT faculty contacted to participate, 95 (68%) responded; 81 (58%) of the 139 potential FT faculty responded. Nonrespondents were similar in terms of gender. Our sample represented faculty from 24 AMCs with the following regional representation: Northeast 7, South 6, Southwest 1, Midwest 7, and West 3.

Hours worked and FTE among PT and FT faculty

Among all survey respondents, PT faculty worked less hours per week than FT faculty (median 33 hours per week [IQR 8] vs. median 50 hours per week [IQR 12], p < 0.001). There were no differences in the number of hours PT and FT faculty reported spending at home on work-related tasks (median 4 hours per week [IQR 4.75] vs. median 5 hours per week [IQR 5] p = 0.55). The mean FTE of PT faculty was 66%.

Personal and professional characteristics among PT and FT faculty

The personal and professional characteristics of all respondents are shown in Table 1. PT faculty were more likely than FT faculty to be married, have children, and report no educational debt (all p < 0.001). Compared with FT faculty, PT faculty were more likely to be Cs or CEs and less likely to be fellowship trained (p < 0.001 for both).

Effort reporting and academic support among PT and FT faculty

Among all respondents, PT faculty spent a greater percentage of their total work hours in patient care (55% vs. 45%, p = 0.01), more time teaching (32% vs. 23%, p = 0.01), and less time in research activities (5% vs. 15%, p = 0.01) compared with FT faculty. There were no differences in the amount of time PT and FT faculty spent in administrative roles (12% vs. 15%, p = 0.28). Among CEs, there was no difference between PT and FT faculty in time spent in patient care (57% vs. 51%, p = 0.19), research (4% vs. 5%, p = 0.39), teaching (33% vs. 26%, p = 0.05), and administrative activities (12% vs. 17%, p = 0.07). Figure 1 demonstrates significant differences in the proportion of respondents who reported use of various types of academic support. When analyzing CEs only, the differences in academic support between PT and FT faculty were no longer significant.

Measures of academic productivity and associated factors

The number of PT CIs in our sample was very small; therefore, multivariate regression analysis was conducted for CEs only to determine which factors were associated with measures of academic productivity. FT faculty reported more publications than PT faculty (median 2 [IQR 5] vs. median 0 [IQR 1] p < 0.001) and were more likely to have received

Table 1. Personal and Professional Characteristics of 176 Respondents: Comparisons by Part-Time and Full-Time Status

<table>
<thead>
<tr>
<th>Respondent characteristic</th>
<th>Part-time</th>
<th>Full-time</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years, mean (SD)</td>
<td>41 (6.3)</td>
<td>40 (6.2)</td>
<td>0.43</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>89 (95)</td>
<td>71 (88)</td>
<td>0.11</td>
</tr>
<tr>
<td>Married, n (%)</td>
<td>94 (99)</td>
<td>68 (84)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Children, n (%)</td>
<td>91 (97)</td>
<td>51 (63)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Primary role, n (%)</td>
<td>4 (4)</td>
<td>18 (22)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Clinician-investigator</td>
<td>23 (24)</td>
<td>8 (10)</td>
<td></td>
</tr>
<tr>
<td>Clinician</td>
<td>68 (72)</td>
<td>55 (68)</td>
<td></td>
</tr>
<tr>
<td>Fellowship training, n (%)</td>
<td>22 (23)</td>
<td>36 (44)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No educational debt, n (%)</td>
<td>66 (70)</td>
<td>46 (57)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Years on faculty, mean (SD)</td>
<td>8.9 (5.3)</td>
<td>7.5 (5.6)</td>
<td>0.09</td>
</tr>
<tr>
<td>Rank, n (%)</td>
<td>10 (11)</td>
<td>9 (11)</td>
<td></td>
</tr>
<tr>
<td>Instructor</td>
<td>57 (61)</td>
<td>55 (68)</td>
<td></td>
</tr>
<tr>
<td>Associate Professor</td>
<td>18 (19)</td>
<td>14 (17)</td>
<td></td>
</tr>
<tr>
<td>Full Professor</td>
<td>2 (2)</td>
<td>3 (4)</td>
<td></td>
</tr>
<tr>
<td>Otherb</td>
<td>7 (7)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

*aNot all calculations are based on n = 95 because of missing data, which represent <1% of responses per question. There were no missing data for full-time faculty.

*bOther represents 1 clinical assistant, 4 clinical associates, 1 clinical professor, and 1 lecturer.

![FIG. 1. Proportion of the 176 respondents reporting which types of academic support they have used. Comparisons are made by part-time vs. full-time status and by clinician-educator vs. clinician-investigator role. All p < 0.05 except for the comparison of administrative assistance between CEs and CIs, where p = 0.06. CE, clinician-educator; CI, clinician investigator.](image-url)
funding for research or other scholarly work (42% vs. 20%, odds ratio [OR] 2.85, 95% confidence interval [CI] 1.36-5.98). In multivariate analysis, having one or more publications was independently associated with fellowship training, mentor support, and a full-time year equivalent of ≥6 years. PT status was neither negatively nor positively associated with the outcome (Table 2). Similarly, fellowship training, mentor support, administrative assistance, and a full-time year equivalent of both 4–6 years and ≥6 were independently associated with having received funding (Table 3). Working PT was neither negatively nor positively associated with funding support.

Discussion

We studied PT and FT faculty in divisions of GIM at AMCs to determine which personal and professional characteristics were associated with measures of academic productivity. Analysis of our study sample, the vast majority of whom were female (a finding that is consistent with other published data on PT FPE academic faculty),3–6 revealed that mentorship and other academic support, fellowship training, and years on faculty were associated with academic productivity irrespective of PT status among CEs. These findings may be particularly relevant as younger female physicians, a rapidly growing segment of US doctors, may consider working PT in an effort to balance personal and professional obligations.

Mentoring relationships are thought to be critical for successful careers in academic medicine, and they have been associated with increased publications and grants among mentees.28,29 In our study, mentorship was associated with research training and academic support appear to be critical for academic success regardless of whether one is working PT or FT. It might be reasonable for AMCs to provide academic support for faculty that is proportionate to their FTE. Similarly, institutional leaders may feel more confident about supporting the success of PT faculty who have fellowship training are more likely to be successful and may take this into account when negotiating PT positions with individual faculty.

This study did not address the issue of promotion. Therefore, these data do not add directly to our understanding of the impact of working PT on promotion rates but may shed some light on key issues related to promotion. Current promotion structures and criteria may interfere with the ability of PT faculty to advance. In a study of U.S. and Canadian medical schools focused specifically on policies for PT faculty who commit their FPE to a single academic center, less than a quarter of respondents (32 of 141 medical schools) report having specific promotion policies for PT FPE faculty, and only about half of those schools allow PT FPE faculty to be appointed to or remain on a tenure track for promotion. Of these institutions, however, many had increased the probationary period for PT faculty to be promoted.3 Our findings support such policies. Publications and grant funding were associated with working for a minimum of 4 years FT. Existing promotion schedules that expect advancement to occur within 5–7 years may be unrealistic for PT faculty.

Our study has limitations. First, we relied on self-report for information on participants and the outcome variables. However, we have no reason to believe that respondents to

| Table 2. Factors Independently Associated with Having One or More Publications Among Clinician-Educators, n = 154 |
|-----------|-------------------|-------------------|
| Respondent characteristic | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
| Married | 0.48 (0.13-1.68) | 0.40 (0.06-2.43) |
| Fellowship training | 7.97 (3.22-19.71) | 10.15 (3.30-31.20) |
| Mentor support | 3.90 (1.91-7.98) | 5.00 (2.00-12.52) |
| Administrative support | 3.59 (1.64-7.84) | 2.49 (0.92-6.71) |
| Part-time status | 0.30 (0.14-0.60) | 0.49 (0.18-1.34) |
| Full-time year equivalent | 1.47 (0.55-3.89) | 1.98 (0.53-7.32) |
| <3 years | 2.54 (1.09-5.90) | 4.83 (1.47-15.86) |
| 4–6 years | 1 | 1 |
| >6 years | 1 | 1 |

<table>
<thead>
<tr>
<th>Number of children</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0.58 (0.16-2.05)</td>
<td>1.31 (0.20-8.50)</td>
</tr>
<tr>
<td>One</td>
<td>0.58 (0.23-1.48)</td>
<td>1.31 (0.31-5.49)</td>
</tr>
<tr>
<td>Two</td>
<td>0.45 (0.16-1.24)</td>
<td>0.64 (0.14-2.88)</td>
</tr>
<tr>
<td>Three or more</td>
<td>0.53 (0.18-1.51)</td>
<td>0.57 (0.12-2.66)</td>
</tr>
</tbody>
</table>

*Adjusted for all variables shown in table. Bold numbers indicate statistical significance.

95% CI, 95% confidence interval; OR, odds ratio.

| Table 3. Factors Independently Associated with Having Received Funding for Research or Scholarly Work Among Clinician-Educators, n = 154 |
|-----------|-------------------|-------------------|
| Respondent characteristic | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
| Married | 0.53 (0.16-1.80) | 0.37 (0.06-2.12) |
| Fellowship training | 3.22 (1.48-6.99) | 2.92 (1.13-7.49) |
| Mentor support | 3.16 (1.40-7.12) | 4.17 (1.53-11.32) |
| Administrative support | 11.21 (2.56-49.06) | 14.89 (2.70-81.86) |
| Part-time status | 0.35 (0.16-0.73) | 0.67 (0.24-1.88) |
| Full-time year equivalent | 2.77 (0.77-9.89) | 5.91 (1.26-27.65) |
| <3 years | 4.56 (1.45-14.33) | 10.46 (2.45-44.61) |
| 4–6 years | 1 | 1 |
| >6 years | 1 | 1 |

*Adjusted for all variables shown in table. Bold numbers indicate statistical significance.
our anonymous survey would have reason to misrepresent themselves. Second, our study represents a small subset of academic General Internists and may not be generalizable to academic faculty outside of GIM or to male faculty, as our sample was predominantly female. Third, there is the potential for error in how we estimated full-time equivalent year. We asked PT faculty to report their current FTE. FTE may vary over time and impact productivity. Fourth, publications and funding may not represent the most important measures of academic success for CEs. However in a prospective study of promotion among CEs, a strong linear association was found between number of publications and years to promotion.22 In another study, promotion committee chairs considered publications important for the advancement of CEs.25 Regardless, our study likely does not capture the full contribution PT faculty are making to their institutions and all measures that may be used to assess their merits for promotion. Finally, career intent of our respondents may impact their productivity, and we did not measure their desire to advance academically.

Conclusions

PT faculty may report fewer publications and grants because of insufficient training and academic support, not because they work fewer hours. This finding should be encouraging to faculty who may be considering working PT and institutional leaders who are deciding whether to support PT faculty. AMCs that wish to facilitate the success of their PT faculty should expand the support available for them through mentoring and academic support. Furthermore, the academic productivity of PT faculty may be proportionate to the equivalent number of years they have worked FT. This study provides evidence in support of revising promotion structures to reflect full-time year equivalent. Finally, as the majority of PT faculty in our study self-reported their roles as Cs and CEs, the teaching and clinical activities of PT faculty merit closer study to determine how these activities are considered by promotion committees.

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Disclosure Statement

The authors have no conflicts of interest to report.

References


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