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The Productivity of Washington State's Obstetrician-Gynecologist Workforce: Does Gender Make a Difference?

by

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WWAMI CENTER FOR HEALTH WORKFORCE STUDIES

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About the Workforce Center

The WWAMI Center for Health Workforce Studies at the University of Washington Department of Family Medicine is one of five regional centers funded by the National Center for Health Workforce Information and Analysis (NCHWIA) of the federal Bureau of Health Professions (BHPr), Health Resources and Services Administration (**HRSA**). Major goals are to conduct high-quality health workforce research in collaboration with the BHPr and state agencies in Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI); to provide methodological expertise to local, state, regional, and national policy makers; to build an accessible knowledge base on workforce methodology, issues, and findings; and to widely disseminate project results in easily understood and practical form to facilitate appropriate state and federal workforce policies.

The Center brings together researchers from medicine, nursing, dentistry, public health, the allied health professions, pharmacy, and social work to perform applied research on the distribution, supply, and requirements of health care providers, with emphasis on state workforce issues in underserved rural and urban areas of the WWAMI region. Workforce issues related to provider and patient diversity, provider clinical care and competence, and the cost and effectiveness of practice in the rapidly changing managed care environment are emphasized.

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Abstract

Objective: To compare the practice productivity of female and male obstetrician-gynecologists in Washington State.

Methods: The primary data collection tool was a practice survey that accompanied each licensed practitioner's license renewal in 1998-1999. Washington State birth certificate data were linked with the licensure data to obtain objective information regarding obstetric births.

Results: Of 541 obstetrician-gynecologists identified, two-thirds were male and one-third were female. Women were significantly younger than men (mean age 43.3 years versus 51.7 years). Of the seven crude practice variables, only two showed significant differences: inpatient visits per week (female 10.1 per week, male 12.8 per week, $p \leq 0.01$) and working more than 60 hours per week (female 22.1% versus male 31.5%, $p \leq 0.05$). After controlling for age, ANOVA confirmed these findings and in addition showed that women worked 4.1 fewer hours per week than men ($p \leq 0.01$). When examining the ratio of female to male practice productivity in ten-year age increments from the 30-39 through the 50-59 age groups, a pattern emerged suggesting lower productivity in many variables in the women in the 40-49 age group.

Conclusion: Only small differences in practice productivity between men and women were demonstrated in a survey of nearly all obstetrician-gynecologists in Washington State. Changing demographics and behaviors of the obstetrician-gynecologist workforce will require ongoing longitudinal studies to confirm these findings and determine whether they are generalizable to the rest of the United States.

Introduction

The gender composition of the obstetrics and gynecology workforce in the United States has undergone rapid transformation over the last 20 years. The percentage of women in this workforce has increased from 12 percent in 1980 to 32 percent in 2000. It is projected to increase to 50 percent by 2014, since over 70 percent of entering obstetric and gynecologic (ob-gyn) residents are women (1).

Concerns have been voiced regarding the effect of a predominately female ob-gyn workforce on practice productivity. These opinions are partly based on the belief that women practice fewer hours than male obstetrician-gynecologists, are more likely to interrupt their careers for childbearing and childrearing activities, and are more likely to prematurely terminate fulltime practice (1-3). The few studies that have examined gender differences in practice productivity tend to support these anecdotal concerns (4-6).

Current ob-gyn training program enrollment levels were developed using productivity estimates based on the practices of a predominately male workforce. Substantial differences in the productivity of male and female ob-gyns could have important implications for the size and number of ob-gyn graduate education training programs nationally. This study expands the literature on gender-based practice differences by comparing practice patterns and productivity of all identifiable male and female ob-gyns in Washington State using data from a 1998-1999 licensure survey and the state's vital records.

Materials and Methods

Data Sources

The Washington State licensure database on health care providers licensed between mid-May 1998 and mid-May 1999 served as the core database for this study. A supplementary survey with questions on practice specialty, locations, and volume was sent with each provider's license renewal and then linked with the licensure data. We linked the 1998 American Medical Association (AMA) Masterfile to the licensure data to supply additional information on physician specialty. Last, we linked the 1999 Washington State

birth certificate data with licensure data to identify those physicians practicing obstetrics and their annual number of deliveries. If no 1999 birth certificate linked with the licensure database, we linked the 1998 birth certificate data to ensure ascertainment of obstetrical practice and volume status.

Study Population

Washington State's obstetrician-gynecologists were defined as those MDs and DOs who 1) listed a practice location ZIP code in Washington State and 2) listed gynecology or obstetrics and gynecology as their specialty area on the survey, or educational, administrative, or public health as their primary specialty area and gynecology or obstetrics and gynecology as their secondary specialty area. If these survey data were unavailable, any physicians who reported maternal fetal medicine, reproductive endocrinology, obstetrics, gynecology, gynecologic oncology or obstetrics and gynecology as their primary specialty on the AMA Masterfile were also included. We identified 587 ob-gyns in Washington State. Forty-six of these ob-gyns did not complete the licensure renewal survey, which contained critical information on practice productivity and thus were excluded from the study. The final study population included 92 percent (541) of all obstetrician-gynecologists identified in Washington State.

Study Variables

Gender was the primary variable of interest in this study. Demographic and practice characteristics available from the study databases included age (reported as mean age and by decades—e.g., 30-39,40-49), race, Latino/Hispanic ethnicity, primary work location (e.g., office, hospital), and geographic practice location (i.e., rural, urban). We defined rural practices as those with practice ZIP codes located in one of 52 rural Health Service Areas of Washington State. The Washington State Department of Health has created 124 Health Service Areas throughout Washington State. Fifty-two of these HSAs are considered to be rural and are based on the normative service areas of the state's rural hospitals and clinics.

The licensure survey provided five practice productivity measures: weeks worked in the past year, total professional hours excluding on-call time (e.g., direct patient care, meetings, continuing medical education, other professional activities) per week, direct patient care hours per week at the two main work

locations, outpatient visits per week, and inpatient visits per week. We developed three additional variables from these measures: nondirect patient care hours (total professional hours minus direct patient care hours), reduced hours (under 32 total professional hours per week), and extra hours (≥ 60 total professional hours per week).

We used birth certificate data to develop variables identifying whether each obstetrician-gynecologist was practicing obstetrics during the study period and the number of each obstetrically active provider's deliveries in either 1998 or 1999. An ob-gyn was considered obstetrically active if he or she attended more than five deliveries in the study year. Practice productivity was evaluated using these ten variables.

Analysis

We compared the demographic and practice characteristics and the practice productivity measures between the male and female ob-gyns using standard t-tests for continuous variables and chi-square tests for categorical variables. We calculated female to male productivity ratios for each of our study variables. Because of significant differences in the age distribution between male and female ob-gyns, we used Analysis of Variance (ANOVA) with Scheffe's adjustment to test for gender differences in the continuous practice productivity measures, adjusting for age and examining whether the effect of gender on practice productivity varied by age. Logistic regression was used to test for gender differences in the categorical practice productivity variables (proportion practicing obstetrics, working less than 32 hours per week or working 60 or more hours per week).

Results

Of the 541 ob-gyns in this study, two-thirds (366) were male and one-third (175) were female (Table 1). Women were significantly younger than men. There were no significant differences between men and women in race, ethnicity, primary work location, and urban rural practice location.

Overall, the crude practice productivity rates and the distribution of obstetric deliveries were similar between male and female obstetrician-

gynecologists (Table 2, Figure 1). The only significant differences in crude practice productivity between women and men were lower mean inpatient visits per week for women (10.1 vs. 12.8, $p \leq 0.01$) and a lower proportion of women working 60 or more hours per week (22.1% vs. 31.5%, $p \leq 0.05$). After controlling for age, the ANOVA (not shown) confirmed these findings and, in addition, showed that women worked an average of 4.1 fewer total professional hours than men ($p < 0.01$). The logistic analysis demonstrated that women were 48 percent less likely than men to work 60 or more hours per week after controlling for age ($p < 0.01$). There were no statistically significant differences in direct or nondirect patient care hours or any other productivity measures between men and women in the adjusted analyses.

Because of the dramatic age differences between female and male obstetrician-gynecologists, we performed a stratified analysis by ten-year age groups to determine whether there were differences within age groups that could not be observed in the overall results (Figure 2). In the 40-49 year age group, we observed the lowest productivity ratio in women compared to men for several of the study variables: total professional hours, direct patient care hours, nondirect patient care hours, percentage practicing obstetrics, average number of deliveries per year, working more than 60 hours per week, and working less than 32 hours per week. In general, these differences were on the order of 10 to 20 percent lower productivity for the 40-49-year-old women compared to men. The ANOVA, however, did not reach statistical significance for these measures, as our study's sample was large enough to detect differences of 20 to 40 percent, but not smaller.

Discussion

In this study, we found differences in clinical productivity between women and men ob-gyns in only three of the ten practice productivity variables we examined: total professional hours worked per week, inpatient visits per week, and proportion of providers working 60 or more hours per week. We did not find gender differences in the number of outpatient visits per week, direct or nondirect patient care hours worked per week, the number of births attended per year, or the proportion of providers with reduced practice hours. In addition, we found no significant gender difference in the percentage of licensed practitioners who attended births in the three physician age groups studied.

Our study's finding of minimal differences in practice productivity between female and male obstetrician-gynecologists in practice productivity differs from that of Pearse et al., who estimated a 15 percent discount in productivity for female compared to male obstetrician-gynecologists (4). Pearse et al. used data from two national survey sources: 1998 AMA Socioeconomic Survey (331 respondents) and a 1998 survey of American College of Obstetricians and Gynecologists (ACOG) fellows (1,230 respondents).

These data allowed construction of female/male productivity ratios by age groups for direct patient care hours. The contrast between their findings and ours is illustrated in Table 3. Overall, our data show smaller differences between male and female ob-gyns in direct patient care hours compared to the data from the AMA or ACOG surveys. These variations could represent different practice patterns for women obstetrician-gynecologists in Washington State, differences in the way direct patient care hours were defined in the surveys, or differences in the demographics of women obstetrician-gynecologists in the studies.

Additional female/male productivity ratios in the provision of obstetric care from the ACOG fellows and the AMA Socioeconomic Survey suggest that female obstetrician-gynecologists attended fewer deliveries in all three age groups, but the AMA survey's ratios were much lower than those from ACOG fellow's survey (Table 3). Our study's stratified results were closest to those from the ACOG fellows' survey, yet our adjusted analysis demonstrated no statistically significant difference in the number of births attended.

The most striking difference in practice behavior between men and women obstetrician-gynecologists was found in their proportions working extra hours (≥ 60 hours per week). Men were more likely than women to work 60 or more hours per week in all age three age groups. The difference was especially noteworthy in the 40-49 year age group. Forty-six percent of male obstetrician-gynecologists in this age group worked more than 60 hours compared to 22 percent of women. Whether this is representative of the particular cohort of 40-49 year olds in this study or indicative of a career pattern for men and women ob-gyns cannot be distinguished in this cross-sectional study. Nonetheless, this difference in the degree to which women choose to work extra hours, especially during the prime years of a medical career, may explain the questions that have been raised about women's productivity in the field of obstetrics and gynecology.

There were several differences in the practice patterns of male and female obstetrician-gynecologists that did not reach statistical significance but that may be of clinical significance. Our sample size was insufficient to detect a difference of 10-20 percent in practice productivity between men and women among the individual ten-year age cohorts. Pearse et al. estimated the overall gender difference to be of this order of magnitude but did not perform any statistical test to confirm this finding (4). We noticed that for several of our study measures men but not women in the 40-49 year age group appeared to increase their practice productivity when compared to the 30-39 year age group. This was apparent for the categories of total professional hours, inpatient visits per week, percentage practicing obstetrics, percentage working less than 30 hours per week, and percentage working 60 hours or more per week. These differences were narrowed or reversed when compared to the 50-59 year age group for all but the inpatient visits measure.

A closer look at the total professional hours worked per week in the 40-49 year age group shows the difference between men and women to be due primarily to the decrease in nondirect patient care hours for the women. For women, the direct patient care hours ratio was reduced by only 4 percent, but the nondirect patient care hours ratio was reduced by 16 percent. We created the nondirect patient care variable by subtracting total professional hours from the direct patient care hours. Nondirect patient care hours include these professional activities such as administration, continuing medical education, and professional leadership activities (e.g., hospital committee work, regional and national professional committee work, and speaking/lecturing).

Our data show that men in the 40-49 year age group increase their practice activities compared to the decade earlier. Women do not appear to follow this pattern. They maintain their prior levels of direct patient care but do not engage in as many other professional activities as men. One hypothesis is that childcare needs may reach their peak among families in which women have delayed childbearing until the fourth decade of life. In these families, women ob-gyns may be caring for their families rather than taking on extra professional activities. If a significant portion of nondirect patient care activities involve leadership activities, the field of obstetrics and gynecology may be missing the important leadership contributions of its women members. A more specific look at this issue of the content of men and women ob-gyns' careers over time is an important future task for the field of obstetrics and gynecology.

This study has both limitations and strengths compared to others in the literature. First, because this study's findings are from Washington State only, we cannot assert that they are generalizable to the remainder of the United States. Second, most of the variables in our database were self-reported and therefore subject to unverifiable under and over reporting. However, there is no reason to suspect that men and women would have different self-reporting biases. In addition, the self-reported practice survey data were consistent with the objective obstetric delivery data with regard to practice patterns and ratios. Third, this study was able to provide information on the productivity at a given point in time only. Whether the study practitioners in their 30s will behave in a manner similar to those in their 40s, 50s, or 60s when they reach these ages is an unanswered question. Whether age or gender is the more important influence on practitioners' behavior has never been evaluated. Increasing numbers of women in obstetrics and gynecology will provide an opportunity to answer this question. The answer may be different for different specialties.

This study's strength is its nearly complete population of obstetrician-gynecologists for an entire state. Over 92 percent of practicing obstetrician-gynecologists in Washington State completed the licensing survey during the time period of interest. In addition, we were able to count the actual number of births attended by individual practitioners by linking the licensure survey data with state birth certificate data. This likely produced a more accurate volume of deliveries than by self-reporting, as in the ACOG and AMA data.

Many variables influence whether the size of the ob-gyn workforce will meet the population's needs. Predicting demand for childbirth and gynecologic services is beyond the scope of this paper. Factors influencing the supply of ob-gyn providers include the number graduating from residency, the productivity of those practitioners, and the total duration of practice life of the practitioners. In 1990, Kletke et al. observed that even though female physicians had higher early retirement rates than male physicians, as a group their expected work lives were just as long due to their lower early mortality rates (7). In that study they also predicted the work life of obstetrician-gynecologists to be 23 years after age 50. Currently this projection of working into the eighth decade seems unrealistic in light of external influences in obstetrician-gynecologist practice, such as increasing administrative demands from managed care companies, professional liability concerns, and changing practice structures. The satisfaction of obstetric and gynecologic practice in the United States is one of the lowest of all medical or surgical specialties (8). These external influences and other both positive and

negative factors could affect the workforce projections more substantially than the small gender based differences we observed in our study.

This study suggests that overall clinical productivity of women ob-gyns in the late 1990s in Washington State was not dramatically different from their male counterparts. Although we have data on over 90 percent of obstetrician-gynecologists in our state, apparent differences between age cohorts that may be clinically significant could not be substantiated because of our sample size. Projecting these findings into the future is even more difficult as our cross-sectional data represent a single state during a one-year time period. An ongoing longitudinal study of age- and gender-specific practice productivity patterns is critical to provide accurate data regarding the behavior and capacity of the obstetrician-gynecologist workforce in the United States.

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Table 1: Sociodemographic and Practice Characteristics by Gender

	Male (N = 366)	**Female (N = 175)**	**Total (N = 541)**
Mean age (S.D.)***	51.7 (50.7-52.7)	43.3 (42.3-44.2)	49.0 (48.1-49.8)
Age categories (%)***:			
30-39	13.1	30.9	18.9
40-49	27.6	53.1	35.9
50-59	38.8	14.9	31.1
60+	20.5	1.1	14.2
Race (%):			
White	82.5	80.6	81.9
Black	2.2	2.3	2.2
Asian/Pacific Islander	7.4	11.4	8.7
Native American	1.1	0.0	0.7
Other	6.8	5.7	6.5
Latino/Hispanic ethnicity (%)	2.5	1.7	2.2
Primary work location+ (%):			
Office setting	85.7	84.5	85.3
Practice location (%):			
Rural	14.8	10.9	13.5

*** $p \leq 0.01$.
+ Missing values 44: 14 female, 30 male.

Table 2: Practice Productivity and Patterns by Gender

	Female (N = 175)		Male (N = 366)		Ratio of Female:Male
Weeks worked per year ($\overline{X}$)+	45.9	(45.1,46.7)	46.2	(45.5,46.9)	0.99
Total professional hours per week ($\overline{X}$)+	46.8	(44.7,48.8)	48.0	(46.4,49.6)	0.98
Direct patient care hours per week ($\overline{X}$)+	29.9	(27.3,32.5)	28.6	(26.6,30.6)	1.05
Nondirect patient care hours per week ($\overline{X}$)++	18.0	(15.3,20.7)	20.3	(18.2,22.4)	0.89
Outpatient visits per week ($\overline{X}$)+	61.7	(56.7,66.7)	65.5	(59.5,71.5)	0.94
Inpatient visits per week ($\overline{X}$)**+	10.1	(9.0,11.1)	12.8	(11.6,14.0)	0.79
% practicing obstetrics	79.4	(73.5,85.3)	75.1	(71.2,79.0)	1.06
# of obstetrical deliveries per year ($\overline{X}$) (for those practicing obstetrics)+++	97.0	(88.1,105.9)	103	(85.7,110.3)	0.94
% working < 32 total professional hours per week+	13.5	(8.3,18.7)	16.2	(12.3,20.1)	0.83
% working ≥ 60 total professional hours per week*+	22.1	(17.8,26.4)	31.5	(27.6,35.4)	0.70

* $p < .05$.
** $p < .01$.
*** $p < .001$.
\+ Missing values: weeks worked 27 (9 female, 18 male); total professional hours, % working < 32 hours per week, % working ≥ 60 hours per week 26 (12 female, 14 male); direct patient care hours 49 (13 female, 36 male); nondirect patient care hours 73 (27 female, 46 male); outpatient visits 49 (15 female, 34 male); inpatient visits 70 (18 female, 52 male).
++ Nondirect patient hours were calculated by subtracting direct patient care hours from total professional hours. Nondirect and direct patient care hours do not sum to total professional hours because total and direct hours variables were reported separately and have different numbers of respondents.
+++ One outlier with over 500 deliveries per year was dropped from the analyses.

Table 3: Female:Male Productivity Ratios for Direct Patient Care Hours and Annual Number of Obstetric Deliveries by Age and Study

Productivity Variables	Pearse et al. (AMA Survey) (N = 331)	Pearse et al. (ACOG Fellows Survey)* (N = 1,230)	Benedetti et al. (N = 541)
Direct Patient Care Hours:			
Age Group:			
30-39	0.92	0.90	0.98
40-49	0.94	0.76	0.89
50-59	0.83	NA	0.98
Mean Number of Obstetric Deliveries:			
Age Group:			
30-39	0.68	0.89	0.84
40-49	0.63	0.84	0.81
50-59	0.68	NA	1.15

* Age groups are < 40 and 40+.

NA = not available.

Figure 1: Distribution of Obstetrical Delivery Volume by Gender

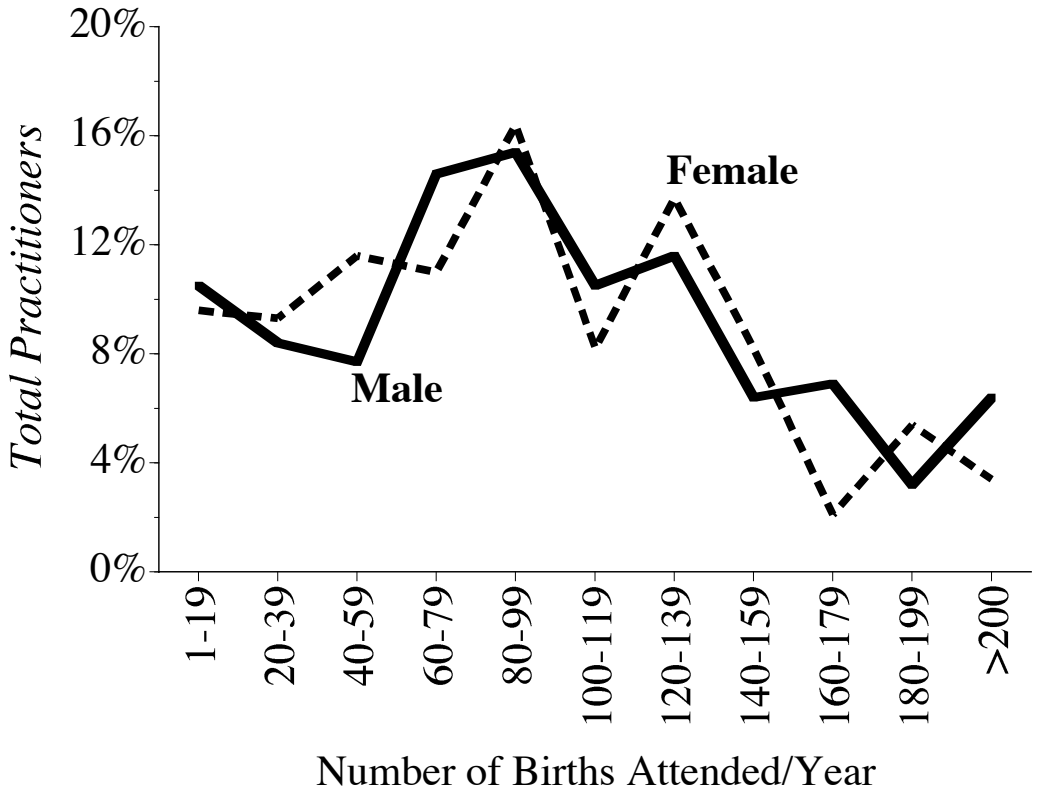
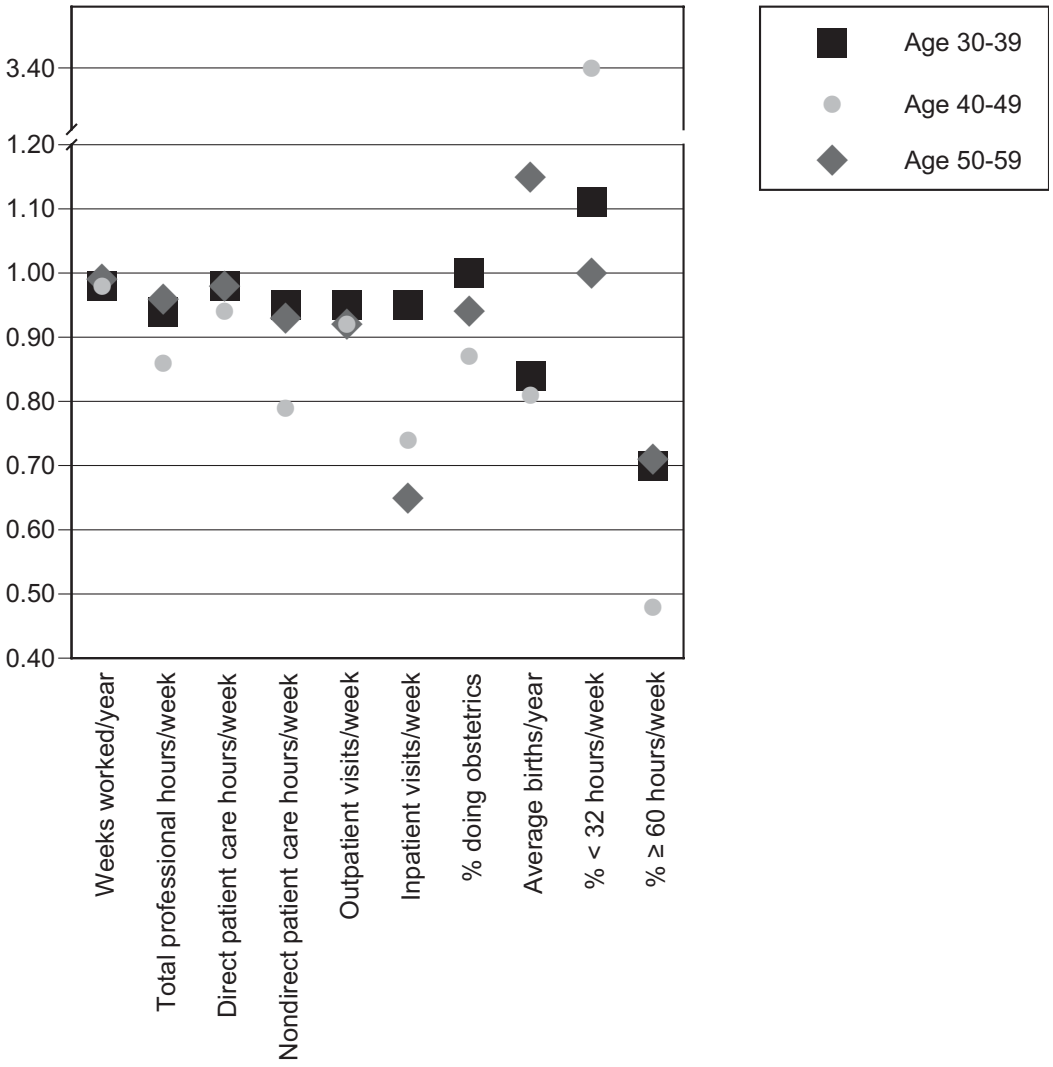


Figure 2: Female:Male Ratios of Practice Productivity by Age and Gender*



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* See the appendix for the percentages for male and female ob-gyns' practice productivity variables.

Appendix: Practice Productivity and Patterns by Age and Gender

	Male	Female	Ratio of Female:Male
Weeks Worked per Year ($\bar{X}$):			
30-39	46.1	45.0	0.98
40-49	47.3	46.3	0.98
50-59	46.8	46.4	0.99
Total Professional Hours per Week ($\bar{X}$):			
30-39	49.1	46.2	0.94
40-49	54.5	47.1	0.86
50-59	50.1	48.0	0.96
Direct Patient Care Hours per Week ($\bar{X}$):			
30-39	30.3	29.1	0.98
40-49	33.1	31.2	0.94
50-59	28.7	28.1	0.98
Nondirect Patient Care Hours per Week ($\bar{X}$):			
30-39	18.9	18.0	0.95
40-49	21.9	17.2	0.79
50-59	22.2	20.7	0.93
Outpatient Visits per Week ($\bar{X}$):			
30-39	61.1	57.9	0.95
40-49	70.8	64.9	0.92
50-59	67.4	62.0	0.92
Inpatient Visits per Week ($\bar{X}$):			
30-39	10.8	10.3	0.95
40-49	13.8	10.2	0.74
50-59	14.0	9.1	0.65
% Practicing Obstetrics:			
30-39	81	81	1.00
40-49	92	80	0.87
50-59	78	73	0.94

	Male	Female	Ratio of Female:Male
# of Obstetrical Deliveries per Year ($\overline{X}$) (for those practicing obstetrics):			
30-39	98	82	0.84
40-49	127	103	0.81
50-59	96	110	1.15
% Working < 32 Hours per Week*:			
30-39	9	10	1.11
40-49	5	17	3.40
50-59	10	10	1.00
% Working ≥ 60 Hours per Week:			
30-39	30	21	0.70
40-49	46	22	0.48
50-59	35	25	0.71

* The percentages of male obstetrician-gynecologists working < 32 hours per week in this appendix are lower than the overall male rate in Table 2 (13.5%). The overall rate in Table 2 includes male obstetrician-gynecologists 60 and older who had a higher rate of working < 32 hours per week (46.6%).

Previous WWAMI Center for Health Workforce Studies and Rural Health Research Center Working Papers

The WWAMI Rural Health Research Center was established in 1988. The WWAMI Center for Health Workforce Studies was established in 1998.

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