

Obstetric Demographics for Female Orthopaedic Surgeons Compared to the General Population and Peer Physicians

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INTRODUCTION:

Medical training occurs during optimal childbearing years. While unique family planning challenges for female surgeons are becoming more widely reported, a gap in knowledge remains regarding fertility and pregnancy risks unique to each surgical subspecialty. Establishing contemporary trends and a current understanding of infertility risks and pregnancy barriers specific to orthopaedic surgeons is imperative to defining steps to improve maternal support for both female orthopaedic trainees and practicing female orthopaedic surgeons. The goal of this study was to determine the prevalence of pregnancy complications, infertility, and maternal support for female orthopaedic surgeons in comparison to the general population and other female physicians.

METHODS:

An anonymous, voluntary survey was distributed to female physicians via private physician social media groups requiring physician credentials from June to August 2021. The groups are open to women physicians of all ages, training levels, types of medical practices, and medical and surgical specialties. The survey queried pregnancy demographics and complications, infertility diagnosis and treatment, workplace environment, and prior education on these topics. Results were compared between orthopaedic surgeons and the general population using data from the Centers for Disease Control as well as between orthopaedic surgeons and other female physicians. Statistical analysis was performed using Fisher's exact test, chi-square with Yates's correction, or Student's t-tests as indicated. Data were analyzed.

RESULTS:

The survey was completed by 4,638 female physicians including 141 (3%) orthopaedic surgeons. Compared with the general population, female orthopaedic surgeons had children significantly later in life (34.1 vs. 23.6 years; $p < 0.0001$), were significantly more likely to have had a miscarriage (40% vs. 19.1%; $p < 0.0001$), to have undergone infertility evaluation (40.1% vs. 8.8%; $p < 0.0001$) or infertility treatment (31.9% vs. 12.7%; $p < 0.0001$), and to have had a pre-term birth (19.9% vs. 10.2%; $p < 0.0001$), Table 1. In total, 46% of orthopaedic surgeons reported experiencing a pregnancy complication, and only 6% of those surveyed received education on the risks of delaying pregnancy. Compared to other female physicians, orthopaedic surgeons were significantly older at first pregnancy (34.1 vs. 31.7, $p < 0.0001$), had fewer children (1.8 vs. 2.0, $p = 0.0094$), were significantly more likely to be discouraged from starting a family during training and practice (56% vs. 42%, $p = 0.0007$), and worked significantly more hours per week while pregnant (59.1 vs. 54.1, $p = 0.0002$), Table 2. There were no differences in miscarriages, preterm births, or infertility evaluation or treatment between female orthopaedic surgeons and other female physicians, Table 2.

DISCUSSION AND CONCLUSION:

Female orthopaedic surgeons have a greater incidence of miscarriage, infertility, and preterm birth compared to the general population. The incidence of these factors was no greater than that of other female physicians. Female orthopaedic surgeons did, however, experience significantly more negative workplace attitudes and longer working hours while pregnant compared to their physician peers. In addition, female orthopaedic surgeons were significantly older at first pregnancy and had fewer children compared to their physician peers, reflecting a specialty culture that lacks sufficient support for pregnancy. The culture of orthopaedic surgery must continue to evolve to better support family planning and childbearing for young physicians during their schooling, training, and early career stages.

Table 1: Pregnancy Demographics in Female Orthopaedic Surgeons versus General Population

	Female Orthopaedic Surgeons	General Population	P value
Age at first pregnancy (years); mean (SEM)	34.1 (0.30)	23.6 (0.18)	<0.0001
Had a miscarriage	40.0%	19.7%	<0.0001
Underwent infertility evaluation	40.4%	8.8%	<0.0001
Underwent infertility treatment	31.9%	12.7%	<0.0001
Preterm birth	19.9%	10.2%	<0.0001

Table 2: Comparison of Pregnancy Demographics between Female Orthopaedic Surgeons and other Female Physicians

	Female Orthopaedic Surgeons n = 141	Female Physicians n = 4497	P value
Had children; n (%)	139 (99%)	4451 (99%)	0.6571
Age at first pregnancy (years); mean (SD)	34.1 (3.5)	31.7 (3.7)	<0.0001
Number of live births; mean (SD)	1.8 (0.9)	2.0 (0.9)	0.0094
Had children before residency; n (%)	2 (1%)	422 (9%)	0.0003
Had children during residency; n (%)	41 (29%)	1585 (35%)	0.1513
Had children after residency; n (%)	128 (91%)	3934 (87%)	0.2988
Had a miscarriage; n (%)	56 (40%)	1828 (41%)	0.8620
Underwent infertility evaluation; n (%)	57 (40%)	1556 (35%)	0.1521
Underwent infertility treatment; n (%)	45 (32%)	1262 (28%)	0.3417
Pregnancy complications*; n (%)	65 (46%)	2350 (52%)	0.1706
Preterm birth; n (%)	19 (13%)	912 (20%)	0.0539
Hours worked/week while pregnant; mean (SD)	59.1 (12.6)	54.1 (15.6)	0.0002
Length of maternity leave (weeks); mean (SD)	9.3 (7.3)	10.3 (6.3)	0.0649
Completed a fellowship; n (%)	126 (89%)	1858 (41%)	<0.0001
Discouraged from starting a family during training or practice; n (%)	79 (56%)	1870 (42%)	0.0007
Received support from workplace regarding pregnancy; n (%)	102 (72%)	3070 (68%)	0.3576
Experienced negative workplace attitudes regarding pregnancy; n (%)	64 (45%)	2207 (49%)	0.3939
Received breast feeding/pumping accommodations; n (%)	83 (59%)	2893 (64%)	0.1822
Received education regarding infertility/delayed pregnancy during training; n (%)	8 (6%)	341 (8%)	0.5156

*hypertension; HELLP (hemolysis, elevated liver enzymes, low platelet count syndrome), IUGR (intrauterine growth restriction), SGA (small for gestational age), PROM (premature rupture of membranes), post-partum hemorrhage