

T-217 - Analysis of Female Demographics in the United States: Relationship Between Education, Fertility, and Infertility Service Utilization

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Keywords

Female fertility, Demographics, Epidemiology,,

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Abstract

Introduction: Participation of females in education impacts upon their decision-making regarding childbearing and has implications for their utilization of fertility services. In this study, we aimed to delineate the continually increasing participation of women in education at bachelor's, master's, and doctoral degree levels in the United States (US), and how it correlates with changes in age of marriage, pregnancy rate after age 35, and rates of diminished ovarian reserve (DOR) diagnosis and use of donor eggs.

Methods: National Center for Education Statistics, Institute of Education Sciences, and US Department of Education reports and projections were analyzed to obtain data on education. Results on percent married and age at first marriage were gathered from Current Population Survey of U.S. Census Bureau. Female employment rates were gathered from publications of Bureau of Labor Statistics. Data on life expectancy and rates of marriage, pregnancy, and birth were gathered from National Center for Health Statistics reports. National summaries by Center of Disease Control and Prevention were used as source of data on fertility rates, artificial reproductive technology cycles and use of donor eggs.

Results: Fractions of women (per 10,000) earning bachelor's, master's, and doctoral degrees increased significantly from 1970 to 2018 (32.6 vs 64.8; $p < .001$; 7.9 vs 27.3; $p < .001$; 0.54 vs 5.7; $p < .001$; respectively). This was paralleled by a significant increase in the percentage of total bachelor's, master's, and doctoral degrees awarded to females in the same time period (43.1 vs 57.5; $p < .001$; 38.8 vs 61; $p < .001$; 9.6 vs 52.7; $p < .001$; respectively), surpassing males in all categories. These changes were associated with a decrease in the percentage of married women (61.9% vs 50.8%), and increase in median age at first marriage (20.8 vs 27.8) from 1970 to 2018. In parallel, mean age of mothers at their first birth increased from 21.4 to 26.8, and pregnancy rates of women aged 35-39 and 40-44 years more than doubled between 1980 and 2010 (0.036 to 0.077 and 0.009 to 0.019/1,000; respectively). With later pregnancy attempts, female fertility rates decreased significantly from 1970 to 2017 (87.9% vs 60.3%, $p < .001$). In addition, women undergoing infertility treatment with assisted reproductive technologies (ART) with a diagnosis of diminished ovarian reserve (DOR) increased from 12% to 31%, between 2005 to 2016, in parallel with an increase (from 16,161 to 24,300) in ART cycles using donor eggs.

Conclusion: Participation of women in education in the US has risen significantly since 1970. This trend is paralleled by increased female employment rates, later occurrence of marriage, increased age of childbearing, decreased fertility rates, and increased DOR diagnosis. Demographic projections for provision of fertility and elective fertility preservation services to women are of paramount importance.