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Editorial

Clinical Research of Epidemiology in Pregnant Women

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Epidemiologic research in pregnant women broadly entails the study of pregnancy complications, pregnancy safety, the incidence/prevalence of medical illnesses and conditions affecting pregnant women, as well factors that influence maternal responses to standard treatments/vaccinations. Epidemiologic studies in pregnancy allow for the study of distinct sub-populations of pregnant individuals to identify predictors and trends in the conditions and diseases affecting pregnancies in those individuals. Lessons learned from epidemiologic research can enhance our understanding of pregnancy course and outcomes, as well as inform interventions and practice patterns that can improve maternal and newborn health. In addition, epidemiologic approaches to study pregnant women can delineate health care disparities that may be associated with outcomes. Furthermore, epidemiologic research can be synergistic with the investigation of genetic predictors of reproductive health, and can guide a more individualized approach to the care of pregnant women. Given the hesitancy among the research community, biopharmaceutical companies, and regulators to include pregnant women in interventional trials, findings from epidemiologic research can provide invaluable guidance for obstetric practice.

Epidemiologic research in pregnant women has evaluated trends in pregnancy-related complications over time, changing incidence and prevalence, as well as disparities that affect pregnancy outcomes. The impact of chronic pre-existing disease on pregnancy outcomes and the impact of pregnancy on the course of preexisting conditions have all been evaluated. Utilizing large population based data sets, our understanding of the interrelated impact of population-based disease characteristics, genetics, and environmental features can be enhanced in order to inform our ability to counsel women during pregnancy and help to predict pregnancy outcomes.

Over the past decade, there have been multiple fields of studies that benefited from epidemiologic assessments. Most recently, during the Coronavirus Disease (COVID)-19 pandemic, large scale studies determined the prevalence of asymptomatic severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) to occur in 66–88% of pregnant women, identified key risk factors for higher maternal morbidity and mortality (including in older, obese, ethnic minority, and pre-existing diabetes/hypertension groups), and identified a clear association of SARS-CoV-2 with increased rates of pre-term birth [1]. These findings were derived from large scale databases generated specifically to evaluate the impact of COVID-19 on pregnancy outcomes, made possible by the implementation of universal screening in pregnancy [2]. Findings from these studies informed approaches to care for pregnant women, including the recommendations for COVID-19 vaccination for pregnant women and a discussion of the inclusion of pregnant women in COVID-19 therapeutic drug and vaccine trials [3].

Population-based studies incorporating disease specific genetic and epigenetic assessments have also contributed to our understanding of pregnancy outcomes. For example, clinical entities such as peripartum cardiomyopathy and preeclampsia are now understood to occur as a result of complex environment-gene interactions [4,5]. By understanding the genomics of pregnancy-related outcomes, we can improve the individualized approach to pregnancy risk assessment.

Epidemiologic research has also contributed to our improved understanding of the disparities in pregnancy outcomes. Research in this field have identified both racial and ethnic disprities in maternal morbidity and mortality at patient, provider, and system levels that contribute to outcomes such as black women being 3–4 times more likely to die a pregnancy-related death. As a result of this research, a call to action was made to identify ways to reduce disparities in adverse outcomes [6].

Other recent epidemiologic trends that have impacted recommendations for management in pregnancy include the study of prevalence and risk associated with hepatitis C during pregnancy. Over the past decade, as a result of the national opioid epidemic, there has been a clear increase in diagnosis of hepatitis C in women of childbearing age and in pregnancy [7]. Furthermore, emerging data from large population-based studies and systemic reviews have suggested an association of hepatitis C in pregnancy with adverse pregnancy outcomes such as cholestasis of pregnancy [8]. As a result of the findings from these epidemiologic studies, professional organizations including American College of Obstetricians and Gynecologists (ACOG) endorsed the shift from risk-based screening to universal screening for hepatitis C in all pregnant women [9].

Similarly, after the first link between aspirin and preeclampsia was suggested by a case report published in 1978, and numerous randomized control trials were conducted to evaluate this association, individual patient data meta-analysis and larger meta-analyses of aggregate data delineated the dose-response effect of aspirin on preeclampsia rates and the recommendation to initiate aspirin prior to 16 weeks of gestational age [10]. Thus, the synthesis of larger scale data was able to delineate broadly accepted treatment guidelines for preeclampsia prevention.

In summary, epidemiologic research is particularly beneficial to study disease and outcomes in pregnant women. It lays the foundation for our improved understanding of pregnancy conditions, and has the potential to inform future interventions in order to optimize care. This issue of "Clinical and Experimental Obstetrics and Gynecology" will share some insights from recent epidemiologic research in pregnant women.

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References

[1] Girardelli S, Mullins E, Lees CC. COVID-19 and pregnancy: Lessons from 2020. Early Human Development. 2021; 162: 105460.

[2] Sutton D, Fuchs K, D'Alton M, Goffman D. Universal Screening for SARS-CoV-2 in Women Admitted for Delivery. New England Journal of Medicine. 2020; 382: 2163–2164.

[3] Blumberg D, Sridhar A, Lakshminrusimha S, Higgins RD, Saade G. COVID-19 Vaccine Considerations during Pregnancy and Lactation. American Journal of Perinatology. 2021; 38: 523–528.

[4] Suh JH, Lee EC, Kim JS, Yoon SY. Association between trunk core muscle thickness and functional ability in subacute hemiplegic stroke patients: an exploratory cross-sectional study. Topics in Stroke Rehabilitation. 2022; 29: 163–172.

[5] Hoes MF, Arany Z, Bauersachs J, Hilfiker-Kleiner D, Petrie MC, Sliwa K, *et al*. Pathophysiology and risk factors of peripartum cardiomyopathy. Nature Reviews Cardiology. 2022. (in press)

[6] Jain JA, Temming LA, D'Alton ME, Gyamfi-Bannerman C, Tuuli M, Louis JM, *et al*. SMFM Special Report: Putting the "M" back in MFM: Reducing racial and ethnic disparities in maternal morbidity and mortality: a call to action. American Journal of Obstetrics and Gynecology. 2018; 218: B9–B17.

[7] Rossi RM, Wolfe C, Brokamp R, McAllister JM, Wexelblatt S, Warshak CR, *et al*. Reported Prevalence of Maternal Hepatitis C Virus Infection in the United States. Obstetrics & Gynecology. 2020; 135: 387–395.

[8] Wijarnpreecha K, Thongprayoon C, Sanguankeo A, Upala S, Ungprasert P, Cheungpasitporn W. Hepatitis C infection and intrahepatic cholestasis of pregnancy: a systematic review and meta-analysis. Clinics and Research in Hepatology and Gastroenterology. 2017; 41: 39–45.

[9] Hughes BL, Jamieson DJ, Kaimal AJ, Caughey AB, Eke A, McReynolds M. Routine hepatitis C virus screening in pregnant individuals. American College of Obstetricans and Gynecologists Practice Advisory. 2021. (in press)

[10] Rolnik DL, Nicolaides KH, Poon LC. Prevention of preeclampsia with aspirin. American Journal of Obstetrics and Gynecology. 2022; 226: S1108–S1119.