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# Association of Pregnancy Related Complications and Increased Risk of Cardiovascular Disease in Women: What do Providers Know and Need to Address the Issue?

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## Introduction

Preeclampsia (PEC), pregnancy induced hypertension (PIH) and gestational diabetes (GDM) has been recently identified as novel cardiovascular disease (CVD) risk factors for the development of heart disease in women.<sup>1,2</sup> These conditions actually double the risk of developing heart disease and stroke over the next 5-15 years after pregnancy.<sup>3</sup> Research shows that 18.2% of women with history of PEC had a cardiovascular event in 10 years following pregnancy compared to 1.7% of women without PEC. In light of these novel CVD risk factors, this provides a unique opportunity for health providers to intervene and bridge the knowledge gap and address the health disparity. Unfortunately, there is little information about the knowledge of provider in the Lehigh Valley area regarding the future health risk of pregnancy complications and current guidelines on treatment and counseling patients post pregnancy.

## Objective

This study aimed to assess provider's awareness, knowledge, and perceptions regarding pregnancy complications with maternal long-term adverse cardiovascular outcomes and prevention of heart disease. Additionally, we assessed providers' preference for distribution of information for future education.

## Methods

An online, voluntary, and anonymous survey was distributed to providers including physicians, fellows, nurse practitioners, and physician assistant in obstetrics/gynecology, cardiology, family medicine and internal medicine departments between October 2016 and December 2016. The questionnaire is an adaption from a previously validated survey that tested the knowledge of PEC. All information had been verified to be consistent with the American Hearts Association and Centers for Disease Control and Prevention. Responses were collected via online software, Qualtrics and analyzed using descriptive and inferential statistics.

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## Results

Overall completed response rate was 68% (111/162) with representation from obstetrics/gynecology (22%), maternal fetal medicine (3.67%), cardiology (15.60%), family medicine (2.675%), and internal medicine (55%) who was mostly comprised of physicians (34.23%) and residents (26.13%). Survey demonstrated majority of the providers were aware of the novel cardiovascular risk factors GDM (84.25%), PIH (86.3%), and PEC (82.88%) and its cardiovascular complication. Despite this knowledge, 68% of providers counsel females with history of PEC about future cardiovascular risk 0-20% of the time. Of those who perceived presence of barriers in addressing these concerns, lack of knowledge (80%) and time (60%) were the primary factors. Many providers are uncomfortable counseling these patients (43.81%) and are interested in further education of PEC (79.34%).

Figure 1. Are the following cardiovascular risk factors in women?

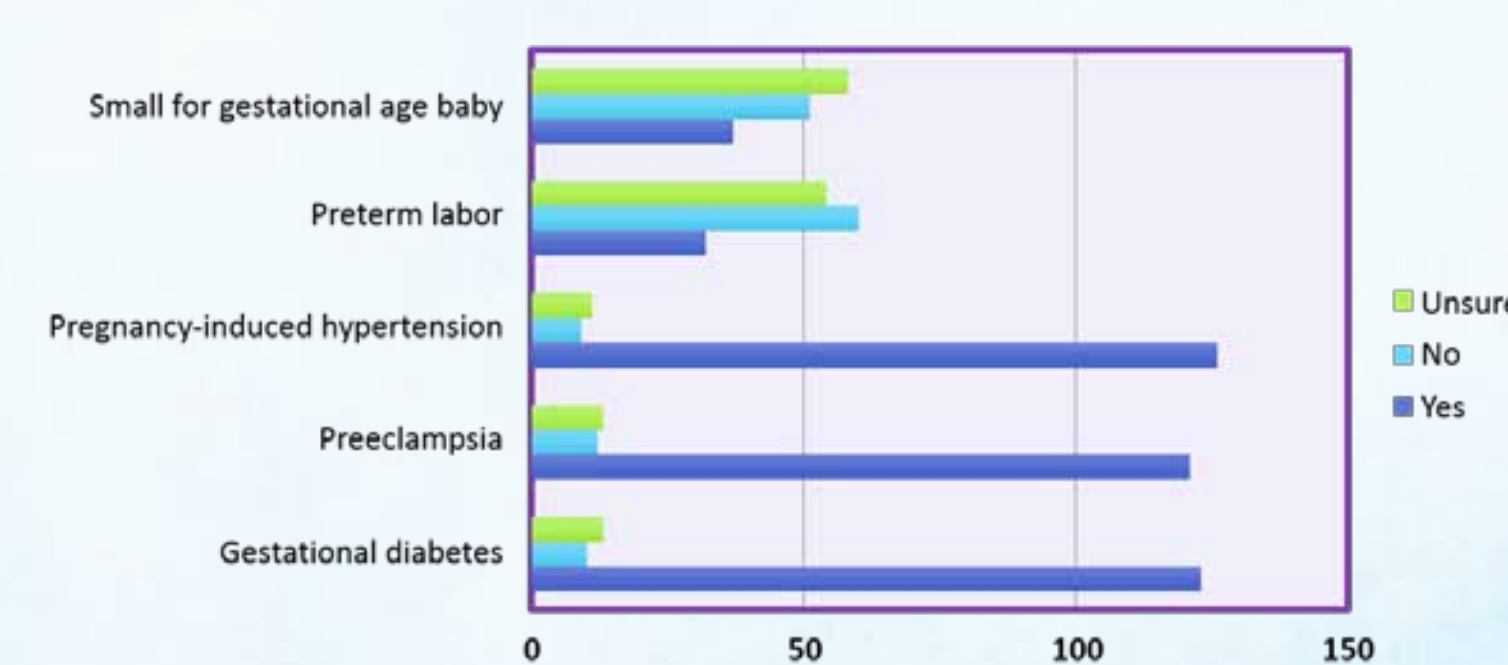


Figure 2. If a woman reports a history of preeclampsia, how often do you counsel her about her future risk of cardiovascular disease?

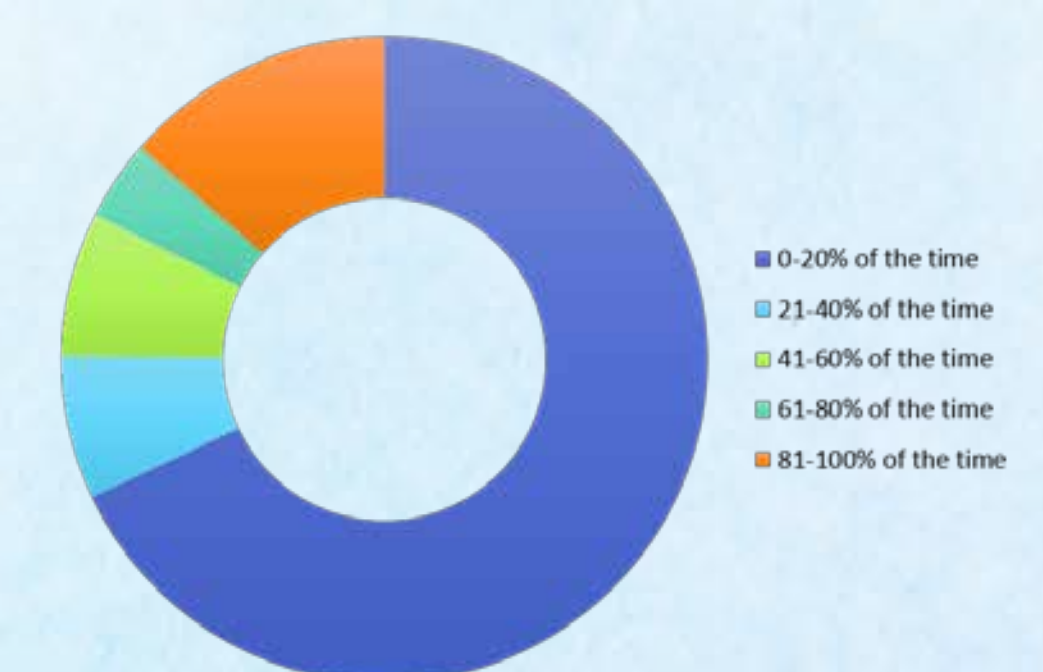


Figure 3. Education Preferences and Comfort Level

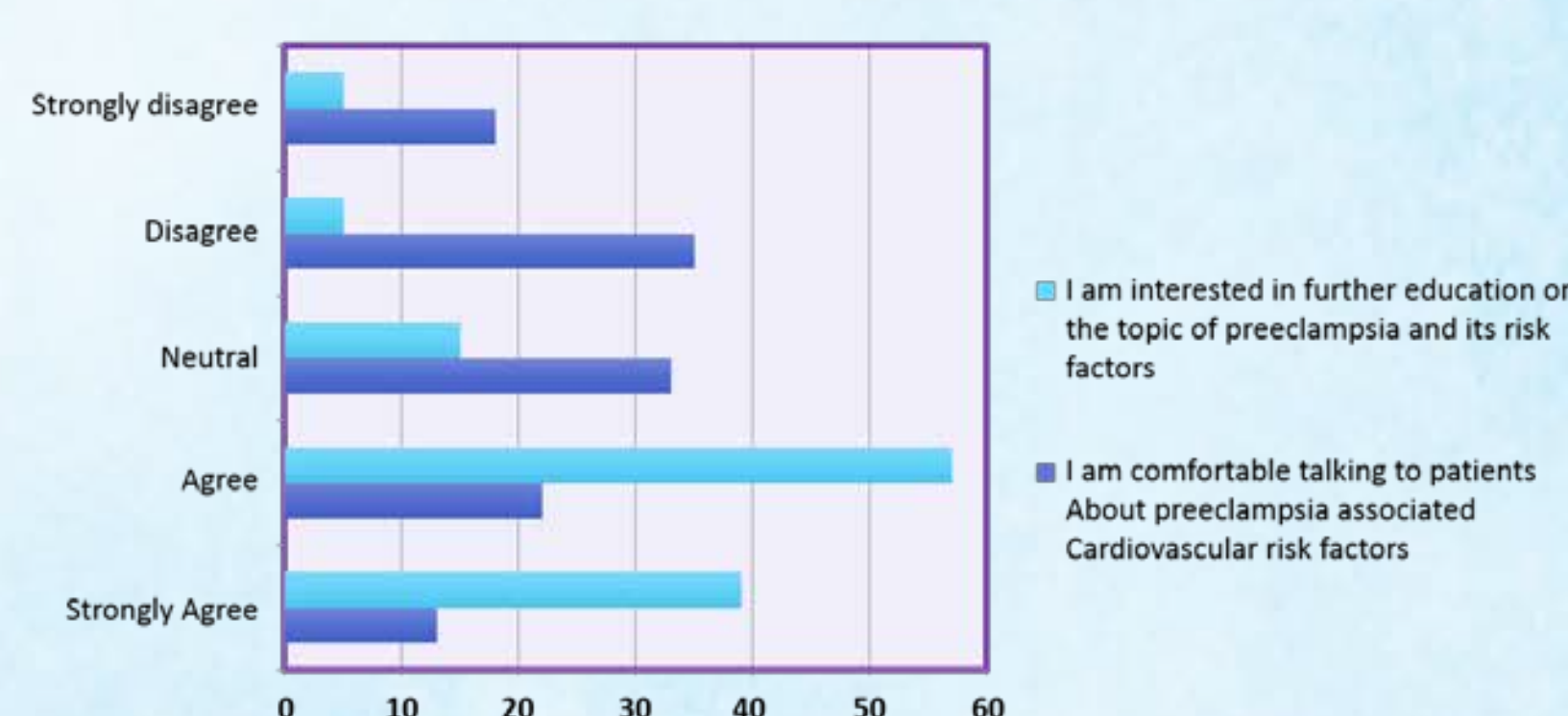
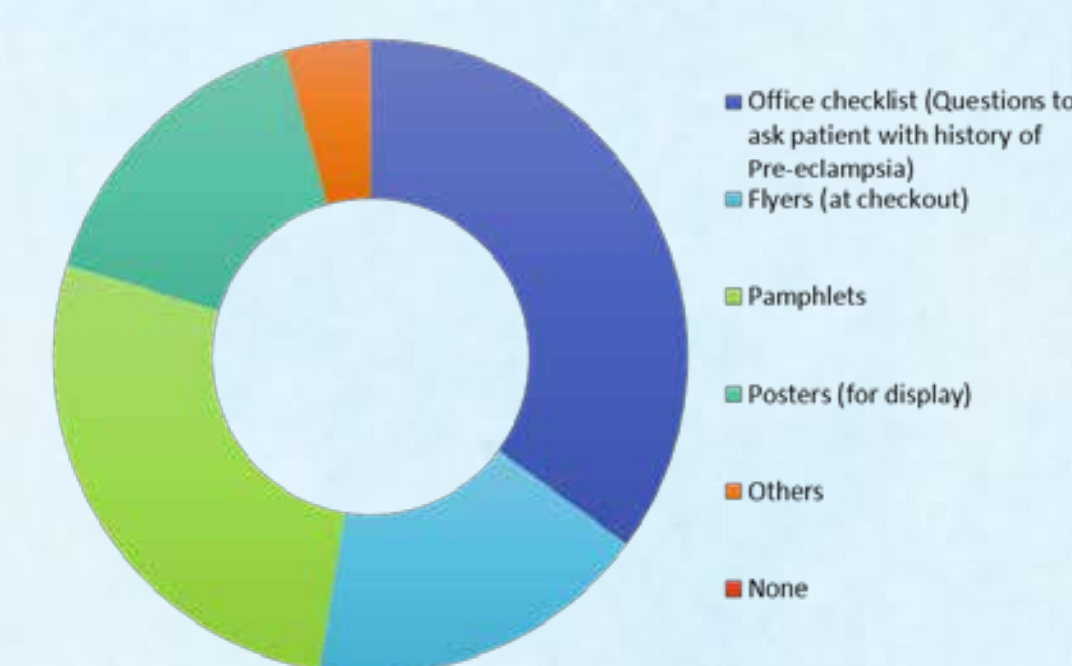


Figure 4. What are the barriers you face in addressing cardiovascular risk in women with history of preeclampsia?



Figure 5. What do you think will be beneficial office tools for educating your patients about preeclampsia risk factors?



## Conclusion

Although most providers were aware of the association between PEC, PIH, and GDM with future cardiovascular risks, they are not comfortable addressing their patients about these issues, possibly due to lack of knowledge and time. Correspondingly, after identifying women with history of PEC, majority rarely counsels their patients about the risks. The study indicates providers are interested in learning more about these novel risk factors and the associations to future CVD risk and argues for improving provider's education in regards to this topic. We believe, the development of office tools to help address these concerns are necessary and can consequently increase providers' comfort level when addressing risk reduction counseling and prevention for women.

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