Heart Health after Preeclampsia

Nichole Stettner

Nidhi Mehta MD
Lehigh Valley Health Network, Nidhi.Mehta@lvhn.org

Published In/Presented At

Heart Health after Preeclampsia

Nichole Stettner; Nidhi Mehta, MD

Lehigh Valley Health Network, Allentown, Pennsylvania

Introduction

- Preeclampsia (PEC) is the onset of gestational hypertension (which is equivalent to systolic blood pressure (BP) ≥ 140 mmHg and diastolic BP ≥ 90 mmHg) in combination with increased protein levels in the urine. Symptoms typically begin late in the pregnancy and can continue postpartum.

- Ambulatory blood pressure (AMBP) is a way to measure BP over a 24-hour period. It is important to have a more accurate assessment of BP in preeclampsia patients to lower the risk of further complications, such as chronic hypertension and eclampsia. AMBP monitoring can help guide medication management in long-term hypertension prevention.

Objectives

- The purpose of this study was to determine the role of AMBP in the PEC population in deciding how BP medication management should be adjusted.

Methods

1	Literature was evaluated for current information regarding PEC, AMBP monitoring, and other relevant factors.
2	Preeclamptic patients from Lehigh Valley Health Network (LVHN) were assigned and a chart review was performed. Number of participants (N) = 13.
3	From these patients, available data from the AMBP monitoring (*Spacelabs Healthcare*), blood pressure at the first cardiology visit, echocardiograms, and BP medications were retrieved from *Epic*.
4	Additional information concerning the demographics, body mass index (BMI), and cholesterol lab data were also collected and interpreted

Results

Elevation of Ambulatory Blood Pressure

Effects of AMBP Monitoring on BP Medication
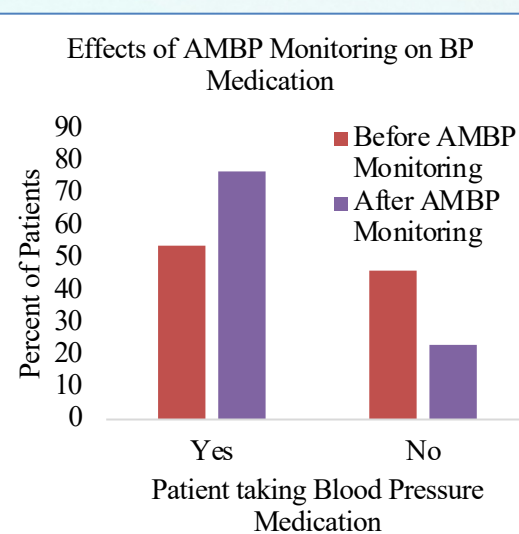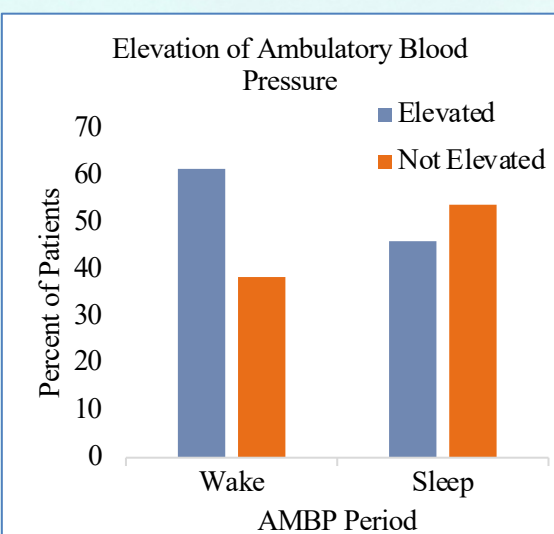
Figure 1. *(Left)* Plot depicting BP elevations during wake and sleep periods of AMBP monitoring. **Figure 2.** *(Right)* Plot indicating the percent of patients taking blood pressure medication before and after AMBP monitoring. **Table 1.** *(Below)* Measured echocardiogram parameters compared to normal values (* indicates N=12; § indicates N=11)
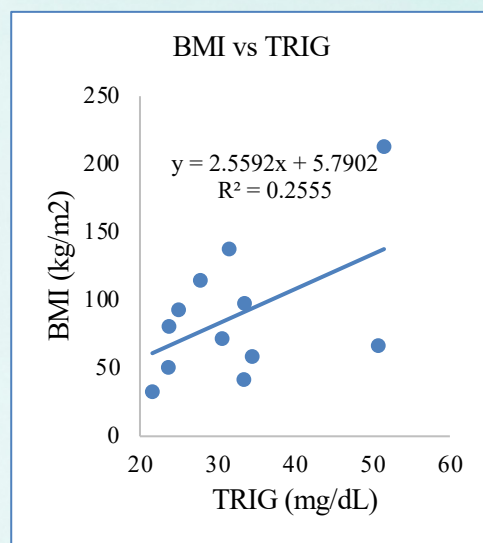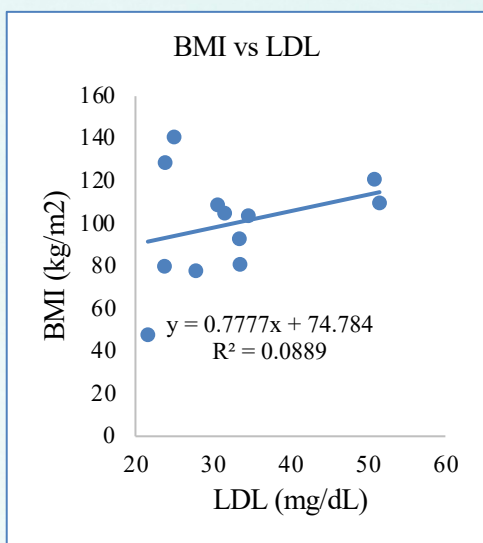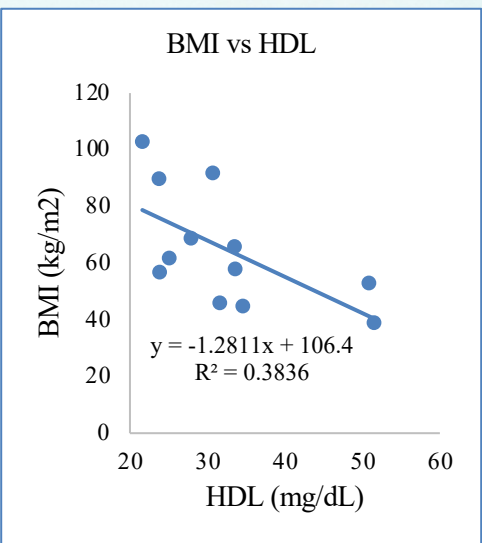
Echocardiogram Parameter	Average Value	Normal Value
Intraventricular septal thickness (cm) [IVS diastolic thickness] *	0.949	1.1
Posterior wall thickness (cm) [LVPW diastolic thickness] *	0.889	1.1
Left Atrial (LA) volume index (mL/m2) §	15.65	≤ 28

BP at First Cardiology Visit vs Average AMBP
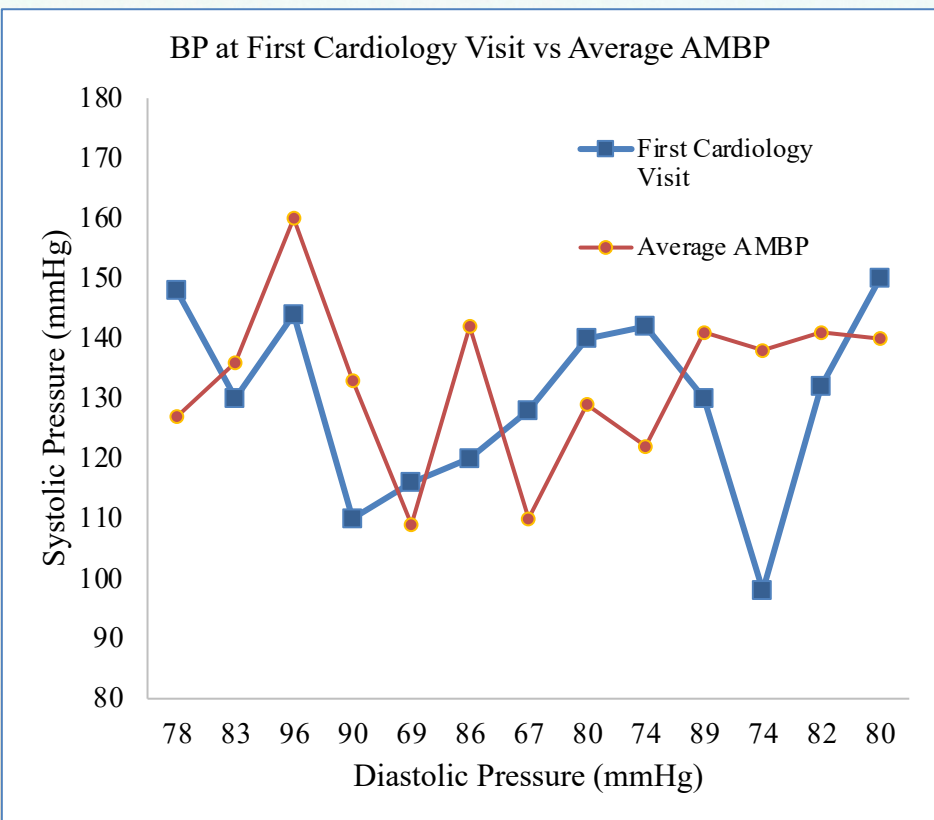
Figure 3. Plot depicting blood pressures taken at the first cardiology appointment and the average AMBP value.

Demographic Parameter	Percent of N *(where N = 13)*
White	61.54
Black	7.69
Asian / Pacific Islander	7.69
Another race or mixed race indicated	15.38
No race record	7.69
Non-Hispanic	76.92
Hispanic	15.38
No ethnicity record	7.69

Table 2. Demographic makeup of the studied patient population.

BMI vs HDL

$y = -1.2811x + 106.4$
$R^2 = 0.3836$

BMI vs LDL

$y = 0.7777x + 74.784$
$R^2 = 0.0889$

BMI vs TRIG

$y = 2.5592x + 5.7902$
$R^2 = 0.2555$

Figure 4. *(Left)* BMI vs high density lipoprotein levels (HDL) **Figure 5.** *(Middle)* BMI vs low density lipoprotein levels (LDL) **Figure 6.** *(Right)* BMI vs triglyceride levels (TRIG)

Conclusions

- In this population of patients with PEC, AMBP monitoring allowed medication management to be altered, with an increase in the number of patients that were prescribed BP medication following AMBP monitoring.

- About 46% of the patients had higher blood pressures at their first cardiology visit compared to their average AMBP; thus, AMBP monitoring can be helpful in providing a BP without the anxiety of a physician's visit.

- AMBP monitoring demonstrated that this population of PEC patients were more likely to have elevated BP during wake periods than sleep periods.

- Cholesterol data did not demonstrate strong correlation with BMI, but the small sample size may have been a confounding factor.

Recommendations

- Continue the study to increase the sample size and correlations

- Investigate how the Continuous Ambulatory Remote Engagement Services (CARES) program affects medication management and overall health

References
1. Alsaileek AA, Osranek M, Fatema K, McCully RB, Tsang TS, Seward JB. Predictive value of normal left atrial volume in stress echocardiography. *J Am Coll Cardiol.* 2006;47(5):1024-1028. doi:10.1016/j.jacc.2005.09.069
2. Okin PM, Devereux RB, Nieminen MS, et al. Relationship of the electrocardiographic strain pattern to left ventricular structure and function in hypertensive patients: the LIFE study. *J Am Coll Cardiol.* 2001;38(2):514-520. doi:10.1016/s0735-1097(01)01378-x
3. Chappell LC, Tucker KL, Galal U, et al. Effect of self-monitoring of blood pressure on blood pressure control in pregnant individuals with chronic or gestational hypertension: The BUMP 2 randomized clinical trial: The BUMP 2 randomized clinical trial. *JAMA.* 2022;327(17):1666-1678. doi:10.1001/jama.2022.4726

LVHN.org

Lehigh Valley Health Network