Pregnant women and the ER: assessing variables predicting ER use

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ABSTRACT

High rates of Emergency Department (ED) use were identified in a secondary analysis of a birth cohort study of African-American (AA) women.

Data were analyzed from 1411 AA women in the immediate postpartum period delivering at a Detroit suburban hospital. Although 99.5% (n=1404) had some form of insurance coverage, 70.5% (n=995) had ≥1 visit to the ED during pregnancy.

We examined a broad set of social, health, and health care factors to determine whether they were associated with use of the ED in pregnancy. We found only a few factors to be statistically significant in association with ED visits.

A history of chronic conditions prior to pregnancy, such as asthma (Odds Ratio (OR), 0.89, confidence interval (CI): 0.64-1.25), hypertension (OR, 0.90, CI: 0.55-1.46), or diabetes (OR, 3.38, CI: 0.77-14.78), was not a significant predictor of ED use in pregnancy. Receiving adequate (or more) prenatal care (OR, 0.84, CI: 0.66-1.05) was also not a significant predictor of ED use in pregnancy.

The content of prenatal care as reported by women was also examined and appeared to be significantly associated with ED use. For example, among women who were counseled about the baby's movement slowing down, 71.6% (n=903) of them went to the ED, vs. 62.1% (n=87) of those who were not counseled (p<0.05).

Further work is needed to understand predictors of ED use. Prenatal counseling may need to change if reducing non-urgent ED visits is a goal.

INTRODUCTION

- In an urban population, 40.4% of respondents had ≥ 1 ED encounter in the previous year.[1]
- In a cross section of women delivering over a 2 month period at a high volume maternity hospital (Kilfoyle et al., 2017), 84% of pregnant women received care in the ED during their pregnancy.
  - 35.6% of them had at ≥1 visit to the ED that was nonurgent. The study defined urgent visit as meeting the following criteria:
    - (1) hospital admission or transfer to another facility, (2) greater than 1 L of intravenous fluids received, (3) intravenous medications received, (4) documentation that the participant was sent to the ED by a provider or other facility, or (5) the chief complaint was a sign of a pregnancy complication or labor.[2]
- 45% of subjects visited the ED because of concern that there was an emergency, 36% were referred by a health care provider.[2]
- 85.8% reported adequate counseling on signs and symptoms that should prompt a visit to the ED; However, only 3.9% accurately identified signs of labor or pregnancy complications.[2]

1. Kushel, M. B., Perry, S., Bangsberg, D., Clark, R., & Moss, A. R. (2002). Emergency Department Use Among the Homeless and Marginally Housed: Results From a Community-Based Study. *American Journal of Public Health, 92*(5), 778–784.

2. Kilfoyle KA, Vrees R, Raker CA, et al. Nonurgent and urgent emergency department use during pregnancy: an observational study. Am J Obstet Gynecol 2017;216:181.e1-7.

METHODS

- Secondary analysis using data from the LIFE study
  - LIFE birth cohort study of preterm birth
  - June 2009-December 2011
  - N=1411, 71% response rate
  - African American (AA) women recruited immediate postpartum in a Detroit suburban hospital
  - Data collection
    - Interviewed within 2 days postpartum
    - Medical abstraction
  - Primary Research Question in Our Analysis:
    - Emergency department (ED) visits during pregnancy in AA women across a wide range of socioeconomic status
    - Prenatal exposures and experiences associated with ED visits
  - ED admissions: ED >1 during pregnancy or not
  - Odds Ratios computed to compare proportions with chi square tests of statistical significance
    - Health history x ED visit
    - Prenatal counseling x ED visit

Table 1: Patient Population Descriptors

Variable	Mean (standard deviation) [Range]
Age (years)	27.85 (±6.27) [17.24-63.90]
	% (N)
Marital Status	
Single	45.8 (645)
Married or Cohabiting	54.1 (762)
Level of Education	
Less than High School	5.6 (79)
Graduated High School	10.8 (153)
Some College or Graduated College	71.9 (1,012)
Household Income	
Less than $49,999	59.9 (806)
$50,000-99,999	22.7 (306)
More than $100,000	5.9 (80)
Insured	99.5 (1404)
Medicaid	57.6 (810)
Non-Medicaid	42.2 (592)
1+ Prior Births	57.6 (813)
Detroit Resident	49.3 (695)
Employed	50.1 (696)
5-30 hours/week	36.2 (306)
40 hours/week	46.3 (391)
40+ hours/week	63.8 (539)
Financial Assistance#	62.9 (888)
1 other source of income	28.0 (395)
2 or more other sources of income	34.9 (493)
ED Visit During Pregnancy	70.5 (995)
Urgent Visit	76.3 (745)

#SSI, welfare, unemployment, food stamps, alimony, WIC, other (self reported)

Table 2: Factors affecting ED visits during pregnancy

	Patient visited ED during pregnancy % (N)	OR (95% CI)
General Health†		
Health insured (n=1402)		0.95 (0.18, 4.94)
Yes (1395)	70.5 (983)	
No (7)	71.4 (5)	
Saw medical doctor regularly prior to pregnancy (n=1407)		0.93 (0.73, 1.19)
Yes (955)	70.1 (669)	
No (452)	71.5 (323)	
Visited private doctor's office in the past year (n=1410)		0.97 (0.76, 1.25)
Yes (977)	70.3 (687)	
No (433)	70.9 (307)	
Had serious medical condition before 18th birthday (n=1411)		**1.32 (1.0, 1.72)***
Yes (370)	74.6 (276)	
No (1041)	69.1 (719)	
History of substance use^(n=1411)		1.18 (0.93 ,1.49)
Yes (648)	72.4 (469)	
No (763)	68.9 (526)	
Smoke cigarettes in the past year (n=1411)		1.16 (0.85, 1.59)
Yes (234)	73.1 (171)	
No (1177)	70.0 (824)	
History During Pregnancyβ		
Insulin-dependent Diabetes (n=1411)		1.19 (0.47, 3.03)
Yes (23)	73.9 (17)	
No (1388)	70.5 (978)	
Chronic Hypertension (n=1411)		0.83 (0.51, 1.34)
Yes (78)	66.7 (52)	
No (1333)	70.7 (943)	
Heart Disease (n=1411)		0.84 (0.25, 2.79)
Yes (12)	66.7 (8)	
No (1399)	70.6 (987)	
Asthma (n=1411)		0.80 (0.52, 1.22)
Yes (100)	66.0 (66)	
No (1311)	70.9 (929)	
Thyroid Disease (n=1411)		1.07 (0.49, 2.33)
Yes (32)	71.9 (23)	
No (1379)	70.5 (972)	
Preeclampsia (n=1411)		0.83 (0.52, 1.31)
Yes (87)	66.7 (58)	
No (1324)	70.8 (937)	
Chorioamnionitis (n=1411)		0.99 (0.73, 1.33)
Yes (242)	70.2 (170)	
No (1169)	70.6 (825)	
Preterm Labor (n=1411)		1.05 (0.74, 1.49)
Yes (171)	71.3 (122)	
No (1240)	70.4 (873)	
Smoked in the first half of pregnancy† (n=1411)		01.23 (0.84, 1.82)
Yes (152)	74.3 (113)	
No (1259)	70.1 (882)	
Received adequate or more prenatal care (n=1411)		1.19 (0.95, 1.52)
Yes (689)	72.4 (499)	
No (722)	68.7 (496)	

^substance defined as marijuana, hashish, pot, grass, cocaine, crack, coke, heroin, methadone, amphetamines, LSD, others

	Patient visited ED during pregnancy N (%)	OR (95% CI)
Prenatal Counseling†		
Prenatal clinic discussed any existing chronic health problems? (n=1398)		1.16 (0.92, 1.46)
Yes (721)	72.1 (520)	
No (677)	69.1 (468)	
If discussed, clinic explained what to do about existing chronic health problems? (n=712)		1.22 (0.83, 1.81)
Yes (556)	73.4 (408)	
No (156)	69.2 (108)	
Prenatal clinic discussed early contractions/labor pains? (n = 1401)		1.11 (0.84, 1.47)
Yes (1111)	71.2 (791)	
No (290)	69.1 (200)	
If discussed, clinic explained what to do about early contractions/labor pain? (n=1107)		1.25 (0.65, 2.39)
Yes (1065)	71.4 760)	
No (42)	66.7 (28)	
Prenatal clinic discussed baby's movement slowing down? (n=1401)		**1.54 (1.07, 2.21)***
Yes (1261)	71.6 (903)	
No (140)	62.1 (87)	
If discussed, clinic explained what to do if baby's movement slows down? (n=1257)		**2.23 (1.24, 3.98)****
Yes (1209)	72.5 (876)	
No (48)	54.2 (26)	
Prenatal clinic discussed smoking? (n=1394)		**1.41 (1.08, 1.85)***
Yes (1089)	72.3 (787)	
No (305)	64.9 (198)	
If discussed, clinic explained what to do about smoking (n=1081)		1.04 (0.79, 1.37)
Yes (664)	72.7 (482)	
No (417)	71.9 (300)	

*p<0.05 **p<0.01
† = Info from Study Questionnaire
ß = Info from Medical Records abstraction

RESULTS

- 70.5% of pregnant AA women had an ED visit during pregnancy.
- Factors associated with statistically significant increased likelihood of ED use during pregnancy in the LIFE cohort of AA women:
  - Women with a serious medical condition before their 18th birthday were about 30% more likely to go to the ED
  - Women whose prenatal counseling discussed baby's movement slowing down, whether or not they were told what to do, were about 50% more likely to have an ED visit during pregnancy.
    - Among these women, women who were told by the prenatal clinic WHAT TO DO about baby's movement slowing down were even more likely, more than 2 times more likely, to go to the ED during pregnancy
  - Women whose prenatal counseling included the topic of smoking were about 40% more likely to go to the ED during pregnancy

DISCUSSION

- Should not assume ED usage in pregnancy is wrong choice
  - Need to determine
    - (1) What is appropriate, and
    - (2) How to educate women to determine that, as well.
- Women with prior health concerns may be going to the ED for concerns outside of pregnancy but those may affect the pregnancy.
  - Determine if prior health concerns warrant ED use during pregnancy or product of lack of primary care
  - Need to provide and maintain routine care for women prior to pregnancy
- Prenatal counseling increased ED usage
  - May be an important area of focus to address appropriate ED usage in pregnancy.
- Call to clinicians and researchers → What is causing high rates of ED use in pregnancy? What is the role for prenatal care provider?
  - Update/standardize prenatal counseling for all pregnant women
  - Directly counsel women about ED usage
  - Improving resources for pregnant women after-clinic hours, outside of ED

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