

PREECLAMPSIA AMONG HISPANIC WOMEN IN A DETROIT HEALTH SYSTEM

Objective: We wished to estimate the incidence of preeclampsia among a group of Hispanic women in the greater Detroit metropolitan area.

Participants: We reviewed delivery records of 559 Hispanic women from a Detroit hospital and prenatal records of 134 Hispanic women who received care from an affiliated federally qualified health center in southwest Detroit.

Design: A retrospective chart review was conducted. The physician's diagnosis was used to study hospital patients. The health center patients were diagnosed on the basis of criteria established in the National High Blood Pressure Education Working Group Report.

Results: In 1998, Hispanic women who delivered at the study hospital had an incidence of preeclampsia or pregnancy-induced hypertension (PIH) of 1.3% (7/559), compared to non-Hispanics 5.3% (118/2241) ($\chi^2_{(1)}=10.35$, $P<.05$). The relative risk was .24. From health center prenatal records, the incidence of preeclampsia/PIH among the 134 patients was 3.7%. The difference in the incidence of preeclampsia/PIH between delivery records at the hospital (1.3%) and health center prenatal records (3.7%) was not statistically significant ($\chi^2_{(1)}=1.6$, $P>.10$).

Conclusion: Among women giving birth at a Detroit hospital, Hispanic women had a lower risk of developing preeclampsia or PIH compared to non-Hispanic women. (*Ethn Dis.* 2007;17:118–121)

Key Words: Preeclampsia, Hispanic Americans, Pregnancy Induced Hypertension, Incidence

SeonAe Yeo, RNC, PhD; Pamela J. Wells, MSN; Edith C. Kieffer, PhD; George H. Nolan, MD, MPH

INTRODUCTION

Health disparities persist among ethnic groups in the United States. Providing care for the growing number of Hispanic women is a challenge to healthcare providers because validated study data that support the rationale for the best care are sporadic at best. For example, Hispanic pregnant women in the United States are reported to be at high risk for various illnesses such as gestational diabetes or obesity,¹ while they are reported to be low risk for preeclampsia.^{2,3} Since Hispanic populations are heterogeneous regionally, and the state of familiarities with English language and neighborhood varies, prevalences of health conditions need to be carefully determined.

Most Hispanic patients who deliver at the hospital we studied are first-generation Mexican immigrants, and some are migrant workers. More specifically, the residents in this community are 90% Mexican, 5% Puerto Rican, and 5% other Hispanic.⁴ Of the Mexican Hispanics, 80% have recently emigrated primarily from midwestern Mexico. Most of these women speak little or no English. According to McGlade,⁵ Mexican-born individuals, as a group among diversified Spanish-speaking populations, possess the lowest incidence of low-birthweight infants in the United States, of which preeclampsia and hypertension are a leading cause.⁶

Preeclampsia is a multisystem disorder of pregnancy in which the normal hemodynamic response to pregnancy is compromised. It is manifested during the latter half of gestation and is diagnosed by the presence of hypertension, proteinuria, and edema in pregnant women previously without such findings. The

physiologic manifestations involve a generalized increase in vasoconstriction and vasoreactivity, decreased organ perfusion, and platelet activation. The underlying cause of preeclampsia is unknown, and diagnosis is often inconsistent,⁷ which further complicates the issue. Geller⁷ et al examined the accuracy of the diagnoses on discharge records for mild and severe preeclampsia and eclampsia by using a dataset from a tertiary medical care system in the Midwest that is somewhat similar to our hospital. They reported that less than half (45.3%) of diagnoses made for mild preeclampsia met the criteria set by the American College of Obstetricians and Gynecologists (ACOG).⁸ Among those whose disease was recorded incorrectly as mild preeclampsia, 23.4% had gestational hypertension. Part of this low sensitivity of diagnosis, however, may be attributable to incomplete medical records.

A few reasons support the hypothesis that Hispanics may have a higher incidence of preeclampsia than currently diagnosed. Obesity is a risk factor for preeclampsia,⁹ and Hispanics make up 63% of obese pregnant women. Hispanics have a higher risk for gestational diabetes,^{6,10} and a high co-morbidity between gestational diabetes and preeclampsia is reported in multiple studies.¹⁰ But existing studies demonstrate a wide range of the preeclampsia incidence. A paucity of data exists as to the incidence of preeclampsia among Hispanic women in the United States. In order to provide data to fill in this void, we examined the incidence of preeclampsia among the Hispanic population from two different clinically available data sources: 1) labor and delivery logs in a hospital and 2) prenatal records in a clinic.

From the University of Michigan School of Nursing, Division of Health Promotion and Risk Reduction (SY), University of Michigan School of Social Work (ECK, GHN), Ann Arbor, Michigan; Lucile Packard Children's Hospital at Stanford, Palo Alto, California (PJW).

Address correspondence and reprint requests to SeonAe Yeo, PhD; University of Michigan School of Nursing; Division of Health Promotion and Risk Reduction; 400 North Ingalls; Ann Arbor, MI 48109-0482; 734-998-1030; 734-998-1027; seonaeyo@umich.edu

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METHODS

A retrospective chart study was conducted with two data sources, the labor/delivery log on the obstetric unit of a large Detroit hospital and the prenatal records of a Detroit federally qualified health center for the year 1998. The hospital is part of a system of integrated health centers, hospitals, and multispecialty medical physician groups that provide the full range of medical services to >2.5 million people in southeast Michigan. A total of 2800 children were born at the study hospital during 1998.

Most of the study hospital's Hispanic deliveries are in women who received their prenatal care at an affiliated federally qualified health center, which provides medical care and other health services in the predominantly Hispanic community of southwest Detroit. The hospital provides high-risk obstetric care and normal and high-risk labor and delivery services to the health center's prenatal patients, almost 90% of whom are of Mexican origin. The health center's family practice physicians are affiliated with the hospital.

Hospital Records

Hospital data were collected from the delivery log, which also contains a limited amount of demographic information and medical diagnoses. Diagnoses recorded in the log were collected as they appeared. Physicians at the labor and delivery unit reported that they made diagnoses according to the criteria used in the report of the National High Blood Pressure Education Program Working Group Report

on High Blood Pressure in Pregnancy.¹¹ Women who had blood pressure elevations detected during pregnancy for the first time and who did not have proteinuria were classified as having gestational hypertension or pregnancy-induced hypertension (PIH).¹¹ In consideration of potential disagreements of diagnoses among preeclampsia or PIH, patients in the delivery log with a diagnosis of preeclampsia or PIH were cataloged as the preeclampsia/PIH group.

Health Center Prenatal Records

The prenatal records for Hispanic women who gave birth during 1998 were reviewed, and diagnoses were made according to criteria established in the National High Blood Pressure Education Working Group Report on High Blood Pressure in Pregnancy, which was used to establish ACOG's guidelines. During 1998, 393 Hispanic women who received prenatal care at the health center gave birth at the study hospital. Randomly selected prenatal records of Hispanic pregnant women ($n=134$) were reviewed to provide the basis for data analysis.

In order to diagnose a case of preeclampsia, the following criteria was met: 1) blood pressure ≥ 140 mm Hg systolic or ≥ 90 mm Hg diastolic that occurs after 20 weeks of gestation in a woman with previously normal blood pressure (this criterion must be met twice at least six hours apart) and 2) proteinuria, defined as urinary excretion of .3 g protein (urine dipstick 1+) or higher in a 24-hour urine specimen.

All prenatal records were reviewed for each visit to identify conditions that meet the diagnostic criteria set by the working group. Diagnoses of preeclampsia and PIH were made independently and later cataloged as preeclampsia/PIH for the comparison with the labor/delivery log data. The incidences of preeclampsia/PIH among Hispanics were compared between the hospital and the health center. Patients

manifesting preeclampsia only during labor and postpartum would not generally be recorded in the health center's prenatal records. Study protocols were approved by the institutional review boards of the study hospital. Pearson's χ^2 tests were applied to compare the two groups. Alpha was set at .05 for two-tailed tests. The Statistical Package for Social Sciences (SPSS) 11.0 was used for data analysis.

RESULTS

Hospital Records

The delivery log indicated 2800 women gave birth at the study hospital during 1998. Twenty percent of births (559) were to Hispanic women. We identified 125 preeclampsia or PIH cases, of which 5.6% of cases (7) were to Hispanic women. Prevalence of Hispanic women in all births (25%) and in the cases of preeclampsia (5.6%) was significantly different ($\chi^2_{(1)}=10.35$, $P<.05$). The incidence of preeclampsia/PIH among Hispanics was 1.3% (7/559), while the incidence of preeclampsia/PIH among non-Hispanics was 5.3% (118/2241). The relative risk for Hispanics to have preeclampsia/PIH was .24. This result indicates that Hispanic women have a lower incidence of preeclampsia/PIH compared to other ethnic groups in the labor and delivery logs.

Health Center Prenatal Care Records

The incidence of preeclampsia among the sample of the health center's Hispanic patients during 1998 was 1.5% (two cases out of 134 records) according to the working group's diagnostic criteria. In addition, three cases of gestational hypertension were noted (2.2%). When we cataloged both preeclampsia and PIH in parallel to the data from the labor and delivery log at the Henry Ford Medical Center (HFMC), the preeclampsia/PIH inci-

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dence was 3.7% at the health center. The difference in the incidence of preeclampsia/PIH among Hispanic women between the hospital's delivery records (1.3% of preeclampsia/PIH) and the health center's prenatal records (3.7% of combined incidence of preeclampsia and PIH) was not statistically significant ($\chi^2_{(1)}=1.6$, $P>.10$).

DISCUSSION

The incidence of preeclampsia was estimated from two different data sources in this exploratory study. From the hospital log we estimate 1.3% of women were categorized in the preeclampsia/PIH group, while health center's prenatal records indicate 1.5% of preeclampsia and 2.2% of gestational hypertension, totaling of 3.7%. While a number of true cases is difficult to estimate from clinically available data, the incidences of documented preeclampsia/PIH for Hispanic women is small compared to available data of the incidence for African American and non-Hispanic White women (5.4% and 4.0% respectively found in the health system's corporate database).¹² Being Hispanic is considered a low risk for preeclampsia or PIH in the clinical populations studied.

Varying incidences are reported in other studies of preeclampsia, from <1% to >10%.^{2,13-16} For example, Knuist studied the incidences of preeclampsia among different ethnic groups from 2444 nulliparous women

with singleton gestations registered for prenatal care in eight practices of midwives in and around Amsterdam.² In Amsterdam, women across sociocultural strata use midwifery services. The study identified the preeclampsia cases from prenatal records that met the diagnostic criteria set by the International Society for Study of Hypertension in Pregnancy, a similar guideline to the working group report.¹¹ This approach for identifying cases is quite similar to the method applied to collect data at the health center in our study.

They identified five ethnic groups according to their countries of origin: White women were those originating from Western Europe, predominantly Dutch; Mediterranean women were predominantly first-generation immigrants from Morocco and Turkey; Asian women were predominantly Hindustani (from Surinam), Chinese, and Indonesian; Black women were those originating from Surinam, the Dutch Antilles, and West Africa (predominantly Ghana); and women of "other" race/ethnicity were those originating from ≥ 20 different countries. Unadjusted incidences for each ethnic group was 1% for White, 1.9% for Mediterranean, 2.1% for Asian, 2.5% for Black, and 1.5% for others. The study concludes that Black race is a risk factor. Nonetheless, overall incidences range from 1% to 2.5%, much lower than generally listed incidence of 5%–8% but similar to our result (1.5%) at the health center.

On the contrary, Wacker reports much higher incidences of preeclampsia in his study,³ where the diagnoses were taken from a total of 40,456 delivery registers at a large tertiary hospital in Zimbabwe. The procedure was explained: "Every patient who was diagnosed as having pregnancy induced hypertension (PIH) during antenatal or labor period was in the study. Their preeclampsia/PIH rates range from 6.4% to 10%. This procedure for identifying preeclampsia is similar to our study data collection from the

hospital records." However, in the same study, they also report much smaller incidences for two smaller hospitals where more detailed data were available and the cases were identified if diagnostic criteria were met according to the working group criteria.¹¹ These incidences range from 0% to 3.5%, with an average of .8%. This study did not report ethnic compositions. Inconsistencies in diagnosis of preeclampsia in clinical setting may lend to wider ranges of incidences in study reports.

Ethnic differences in the incidence of preeclampsia have been reported previously.^{6,13,14} A group of studies agree that Black race is a risk factor, but Hispanic ethnicity is not, except in a study by Wolf et al. Wolf et al.¹⁴ compared the risk of preeclampsia and gestational hypertension in a prospective cohort study with Hispanic women ($n=863$). In their study, 3.8% of Hispanic women developed preeclampsia, and 1.6% of them developed gestational hypertension. Compared to their non-Hispanic White counterparts in their study, Hispanics had a significantly increased risk for preeclampsia (RR 1.9; 95% CI 1.1–3.3; $P=.01$), after adjusting for age, smoking status, diabetes, blood pressure, body mass index, and multiple gestation. Wolf concluded that Hispanic ethnicity is independently associated with risk for preeclampsia.

Our study results are limited because only unadjusted incidences from clinically available data sources are reported. Other risk factors such as maternal age, body mass index, blood pressure, or history of preeclampsia were not adjusted in our report. The current study is also limited to report only these Hispanic women's incidence without comparison with other ethnic groups. Retrospective medical record study is bound to limitations of interpretation. Further research is needed to confirm the seemingly low incidence of preeclampsia among Hispanic women in this study and to identify relationships between risk factors, socioenvironmen-

tal factors, lifestyle, and the development of preeclampsia.

Within the noted limitations, we deduce the following conclusions. First, differences in data collection may suggest a wider range of preeclampsia incidences than do ethnic differences. Obtaining written diagnoses from medical records rather than identifying cases according to diagnostic criteria may underestimate the incidence of preeclampsia. Second, Hispanic women in southwest Detroit seem to have a comparable incidence of preeclampsia or PIH as in other studies when diagnostic criteria was applied to identify the cases. Lastly, being Hispanic in the studied clinical population indicates a low risk for preeclampsia (RR=.24).

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AUTHOR CONTRIBUTION

Design concept of study: Yeo, Kieffer
Acquisition of data: Yeo, Wells, Kieffer, Nolan
Data analysis interpretation: Yeo, Wells, Kieffer
Manuscript draft: Yeo, Kieffer, Nolan
Statistical expertise: Yeo
Acquisition of funding: Yeo
Administrative, technical, or material assistance: Yeo, Wells, Nolan
Supervision: Yeo, Kieffer, Nolan