

RACIAL AND ETHNIC DISPARITIES IN MEDICAL HISTORY TAKING: DETECTING SUBSTANCE USE AMONG LOW-INCOME PREGNANT WOMEN

Objective: To determine whether providers' medical history-taking of substance use varies with their patients' race or ethnicity.

Design/Setting/Participants: The medical records of 1083 low-income women who delivered at an urban teaching hospital over a 12-month period were reviewed and data were abstracted. The frequency with which the presence or absence of substance use was documented was compared among Black, Hispanic, and White women. Multivariate models predicting documentation of data on substance use were also built.

Results: Information on substance use was more often documented in the medical records of Black and Hispanic women than in those of White women. For example, 74% of Black women, 78% of Hispanic women, and 60% of White women had data on cocaine use documented in their medical records ($P = .0001$). Multivariate analyses found that, after controlling for other factors, Black (odds ratio [OR] 4.1) and Hispanic (OR 5.3) non-clinic patients were more likely than White non-clinic patients to have documented data on substance use history in their medical records. No racial/ethnic disparities were found among clinic patients. Among White women, clinic patients were more likely than non-clinic patients to have documented data on substance use. Among other races and ethnicities, no disparities were found between places of care.

Conclusions: The differential collection of information on women's medical histories may be influenced by organizational factors and/or provider factors. The standard implementation of history-taking protocols would reduce the influence of institutional and personal biases on the care provided to pregnant women and enable all patients to receive appropriate referrals to treatment. (*Ethn Dis.* 2006;16:28-34)

Key Words: Medical History Taking, Pregnancy, Racial Disparity, Substance Abuse Detection

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INTRODUCTION

Previous research has found racial disparities in the delivery of quality health care.¹⁻²⁴ Many explanations for these differences have been offered,^{2,5,9,12,13,18,19,21,23,25-30} including the possibility that providers' attitudes about individuals of certain racial or ethnic backgrounds are associated with differences in care.^{1,31,32} Such stereotyping may result from the complex decisions faced by healthcare providers, which can have negative consequences. Very little, however, is known about how stereotypes are incorporated into clinical decision-making.¹

Clinicians' practices regarding substance use may be a useful venue to examine the processes that give rise to racially disparate treatment. Illicit drug use is stigmatizing and is often linked to racial minorities,^{33,34} even though epidemiologic evidence does not suggest that rates of substance use among minority women are higher than those of White women.³⁴⁻³⁶

This paper draws on data from a study conducted at a teaching hospital in Connecticut. The study focused on cocaine use among pregnant women because previous work had found a high prevalence of use in this hospital (15%),³⁷

and hospital providers refer cocaine-positive newborns to the local child protective service agency. Previous analyses of our data found that, controlling for income level and access to care, providers' decisions to administer a toxicology screen (to test the urine of pregnant and postpartum women for illicit substance use) varied by patients' race.³⁸ Specifically, multivariate analyses found that Black women were more likely to be screened than White women (odds ratio [OR] 1.9). These analyses, however, did not explain what led providers to screen Black women more frequently. One explanation may be that, based on their perceptions of racial groups, providers selectively collect information on factors that influence screening decisions. For example, a past or current history of illicit substance use was a strong predictor of screening in these data (OR 6.6); if providers believe that certain groups are particularly likely to use illicit substances, they may discuss illicit drug use more with those groups than others. Consequently, even if providers respond in a racially neutral manner to a reported history of substance use, their selective history taking might produce racially biased patterns of drug testing.

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Dr. Kerker was a pre-doctoral fellow at Yale University when this research was conducted. Dr. Horwitz was an Associate Professor at Yale University when this research was conducted.

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The analyses presented here explore whether providers collect information on substance use history differently among racial/ethnic groups. These patterns must be understood to ensure that referrals to child protective services are not biased and that women of all races/ethnicities who need substance use treatment are identified and referred to care.

METHODS

Sample and Variables

All low-income, Medicaid-eligible women who delivered at an urban teaching hospital in Connecticut and were discharged between March 1, 1998, and February 28, 1999, were eligible for the study. The study used a cross-sectional design to achieve a sample of 1083, 98.5% of the 1110 eligible participants; the medical charts of the remaining 27 individuals who were eligible could not be located, most likely because of legal intervention. While 61% of the women received prenatal care at the hospital's clinic (referred to here as "the clinic"), 28% went to a neighborhood health center, another hospital, a private provider, or an out-of-state provider for prenatal care. The remainder of the women had no prenatal care site documented in their medical records.

The pre- and postnatal paper charts of women were abstracted by the study director and five students. The six abstractors met regularly to discuss difficult cases and compare coding. The abstractions were conducted with a standard form to obtain information on the demographic, medical, social, and substance use factors that may affect the decision to administer toxicology screens. These factors, documented in the literature, include diagnosis of sexually transmitted diseases, unexplained placental abruption, premature labor, homelessness, inadequate prenatal care, and current or past history of substance use.^{33,34,39-41} We also documented whether or not women were

screened for illicit drug use either during pregnancy or at labor and delivery. This variable was abstracted from the medical records and was coded as positive if a toxicology screen was documented (even if the result was negative), either prenatally or at delivery, in the mother's medical record; it was coded as negative if no indication of a toxicology screen was present. Race/ethnicity, as identified by the provider, also was abstracted from the records. The study design, instrument, and protocol were approved by Yale University's institutional review board. For a detailed description of the measures used see Kerker et al.³⁸

In medical records, risk factors either are documented as being present or absent, or are not documented (neither presence nor absence is mentioned). We coded current cocaine use, current other drug use, current alcohol use, and current tobacco use as documented if a patient's use or non-use was documented in the medical record. If no information was available on a factor, current use was assumed to be unknown to the provider, and we classified the information as not documented.

Data Analysis

The three main racial/ethnic groups represented in these data are Black ($n=451$), White ($n=307$), and Hispanic ($n=249$), and analyses were limited to these groups. The remaining 76 women in the sample were of another race/ethnicity. We first compared the percentages of the documentation of current substance use among the racial/ethnic groups. Since all of the variables were categorical, chi-square tests were conducted to determine if statistical differences existed among the documented data in the three groups. This same analysis was repeated stratified by place of prenatal care (clinic vs other sites of care) and by race/ethnicity and place of prenatal care simultaneously.

Next, we examined the number of documented substance use factors and

created a dichotomous variable, which indicated the documentation of data on all four kinds of substance use. Since 66% of women had documentation on current cocaine use, current alcohol use, current tobacco use, and current other drug use, we categorized this variable into full documentation (0 undocumented factors) vs any undocumented substance use (1-4 undocumented factors). We examined bivariate relationships between this variable and the following factors: race/ethnicity, the medical and social factors that have been shown in the literature to be associated with substance use, place of prenatal care, and demographic variables. We built multivariate models that predicted the full documentation of data regarding substance use. The models were built in a forward stepwise manner and included interaction terms between race/ethnicity and place of prenatal care. Independent variables were added to the model in order of importance, based on the significance of the variables in both the literature and the bivariate analyses. Independent variables that did not contribute significantly to the multivariate model (at the $\alpha=.05$ level) were individually deleted.

RESULTS

As shown in Table 1, Black and Hispanic women, compared to White women, were more likely to be single, young, to have received prenatal care at the clinic, and to have had inadequate prenatal care and were less likely to have completed high school. Black women were more likely than Hispanic or White women to be employed. Black women also were more than twice as likely, and Hispanic women were 1.5 times as likely, as White women to be screened for illicit drugs.

Before conducting comparative analyses, we examined the overall number of undocumented substance use vari-

Table 1. Characteristics of women*

Variable	Black (n=451) n (%)	White (n=307) n (%)	Hispanic (n=249) n (%)	P Value
Marital status				
Married	44 (10.7)	93 (32.6)	35 (14.1)	<.0001
Single	357 (86.7)	177 (62.1)	193 (81.8)	
Divorced	4 (.97)	7 (2.5)	5 (2.1)	
Separated	5 (1.21)	6 (2.1)	3 (1.3)	
Widowed	2 (.49)	2 (.7)	0	
Age				
≤18	45 (10.0)	15 (4.9)	31 (12.5)	<.0001
19–29	322 (71.6)	212 (69.1)	188 (75.5)	
≥30	83 (18.4)	80 (26.1)	30 (12.1)	
Place of prenatal care†				
Hospital prenatal clinic	299 (77.1)	141 (54.0)	167 (73.3)	<.0001
Neighborhood health center	58 (15.0)	7 (2.7)	48 (21.2)	
Clinic at other hospital	43 (.77)	1 (.38)	2 (.88)	
Other‡	28 (7.2)	112 (42.9)	11 (4.8)	
Inadequate prenatal care§				
Employed	64 (14.2)	23 (7.5)	24 (21.6)	.011
Completed high school	182 (40.4)	103 (33.6)	80 (32.1)	.048
Screened for illicit substance use	133 (58.9)	71 (63.4)	58 (38.9)	<.0001
	88 (19.51)	26 (8.5)	32 (12.9)	<.0001

* Percentages are of available data; due to missing data, the n available for the analysis of each variable varies.

† Analysis limited to those with documented prenatal care.

‡ Includes private providers and out-of-state providers.

§ Fewer than three visits or late entry into care.

ables, which ranged from 0 to 4 and had a mean of 0.6. The most commonly documented factor was tobacco use; when only one form of substance use was documented, 76% of the time it involved tobacco use.

Next, we compared the documentation of substance use among Black, White, and Hispanic women. As Table 2 illustrates, the use of substances was more often documented to be either present or absent in the medical records of Black and Hispanic women

than in those of White women. For example, while 74% of Black women and 78% of Hispanic women had information documented in their medical records on whether they used cocaine, this variable was documented for only 60% of White women ($P<.0001$). And, Black (69%) and Hispanic (75%) women were more likely than White (55%) women to have information documented about the use of all four substances ($P<.0001$).

Since race was associated with place of prenatal care, the documentation of data was analyzed by place of care. As shown in Table 2, statistically significant differences were seen in the documentation of substance use between patients who received prenatal care at the clinic and patients who received care from non-clinic providers (either in the neighborhood health center, another local hospital, or in private offices). For example, while the presence or absence of current cocaine use was documented for 76% of clinic women, only 63% of non-clinic women had documentation of this variable in their records ($P=.001$). Similarly, among women who received care at the clinic, 72% had all four factors documented, compared to 57% of those who received care elsewhere ($P<.0001$).

To examine documentation by race in each prenatal setting, stratified analyses were conducted. As Table 3 shows, among women who received prenatal care at the clinic, data were documented just as frequently for Whites as they were for Blacks and Hispanics. In contrast, among patients receiving care in non-clinic settings, Black and Hispanic women were statistically significantly more likely than White women to have information about illicit substance use, alcohol use, and tobacco use documented in their charts. For example, while the presence or absence of current cocaine use was documented for 77% of Black and 81% of Hispanic non-clinic women, only 44% of White

Table 2. Documentation of data by race/ethnicity and place of prenatal care*

Variable	Documentation Among Blacks (n=451)		Documentation Among Hispanics (n=249)		Documentation Among Whites (n=307)		P Value	Documentation Among Clinic (n=614)		Documentation Among Non-Clinic (n=284)		P Value
	n	%	n	%	n	%		n	%	n	%	
Cocaine use	333	73.8	193	77.5	184	59.9	<.0001	466	75.9	180	63.4	.0001
Other drug use	397	88.0	225	90.4	232	75.6	<.0001	557	90.7	219	77.1	<.0001
Alcohol use	418	92.7	232	93.2	258	84.0	<.0001	575	93.7	246	86.6	.0005
Tobacco use	422	93.6	232	93.2	266	86.6	.0020	581	94.6	252	88.7	.002
All four documented†	310	68.7	186	74.7	168	54.7	<.0001	440	71.5	224	57.1	<.0001

* Numbers do not add up to full sample because of missing data.

† Includes cocaine use, other drug use, alcohol use, and tobacco use.

Table 3. Documentation of data by race/ethnicity among clinic and non-clinic patients*

Variable*	Clinic Patients							Non-Clinic Patients						
	Blacks (n=302)		Hispanics (n=170)		Whites (n=142)		P Value	Blacks (n=98)		Hispanics (n=62)		Whites (n=124)		P Value
	n	%	n	%	n	%		n	%	n	%	n	%	
Cocaine use	228	75.5	130	76.5	108	76.1	.9709	75	76.5	50	80.7	55	44.4	<.0001
Other drug use	272	90.1	155	91.2	130	91.6	.8559	85	86.7	56	90.3	78	62.9	<.0001
Alcohol use	282	93.4	159	93.5	134	94.4	.9211	93	94.9	59	95.2	94	75.8	<.0001
Tobacco use	288	95.4	158	92.9	135	95.1	.5149	93	94.9	59	95.2	100	80.7	.0007
All four documented	210	69.5	126	74.1	103	72.5	.5440	71	72.5	48	77.4	48	38.7	<.0001

* Numbers do not add up to full sample because of missing data.

non-clinic women had documentation of this variable in their records ($P<.001$). Black (73%) and Hispanic (77%) non-clinic women were more likely than White (39%) non-clinic women to have information documented about the use of all four substances ($P<.0001$).

Next, four multivariate analyses were conducted that predicted documentation of all four substance use variables. As Table 4 indicates, Black women (OR 1.8) and Hispanic women (OR 2.4) were more likely to have documented substance use factors than White women (model 1). When place of prenatal care was added to the model, these racial/ethnic differences were slightly attenuated but remained statistically significant (model 2). In addition, women who received care at the

clinic were more likely to have documented data on substance use in their charts than women who received care elsewhere (OR 1.6).

To test for an interactive effect between race/ethnicity and place of prenatal care, separate variables were created to represent each race/ethnicity within each place of prenatal care. At the clinic, no differences in documentation among the racial and ethnic groups were found. Among non-clinic patients, Black women were four times and Hispanic women were five times as likely as White women to have documented substance use data in their medical records (model 3). Similarly, separate variables were created to represent each place of care within each racial/ethnic group. Differences between clinic and non-clinic patients were

found only among White patients; White women who sought care at the clinic were four times more likely to have fully documented substance use data than White women who received care elsewhere (model 4).

DISCUSSION

Main Findings

We found that information on substance use was more often documented in the medical records of Black and Hispanic women than in those of White women. However, in both bivariate and multivariate analyses, racial and ethnic differences in documentation were found only among non-clinic patients, ie, those who received prenatal care at the neighborhood health center, another local hospital, or in the offices of private providers. Differences in documentation between clinic and non-clinic patients existed only among White women, because of the particularly low documentation among White women in non-clinic settings.

Several possible interpretations of these findings exist. For instance, they may be the result of racial or ethnic stereotypes, used to help providers simplify a complex decision-making process, especially in certain circumstances. Although all patients in this study delivered at the hospital, not all patients received prenatal care at the hospital clinic, and hospital providers do not generally know or have an

Table 4. Multivariate model predicting documented drug use (all four variables documented)

Variable	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)
Black†	1.8 (1.3–2.4)	1.7 (1.2–2.2)	*	*
Hispanic†	2.4 (1.7–3.4)	2.1 (1.5–3.1)	*	*
Age <30	1.5 (0.9–2.5)	1.4 (0.9–2.4)	1.4 (0.8–2.4)	1.5 (0.9–2.5)
Hospital clinic patient	*	1.6 (1.2–2.1)	*	*
Clinic/Black‡	*	*	0.9 (0.6–1.3)	*
Clinic/Hispanic‡	*	*	1.1 (0.6–1.8)	*
Non-clinic/Black§	*	*	4.1 (2.3–7.3)	*
Non-clinic/Hispanic§	*	*	5.3 (2.7–10.7)	*
White/clinic	*	*	*	4.0 (2.5–6.5)
Black/clinic¶	*	*	*	1.1 (0.7–1.7)
Hispanic/clinic#	*	*	*	0.9 (0.5–1.7)

* This variable was not included in the model.

† Compared to White; ‡ Compared to clinic/White; § Compared to non-clinic/White; || Compared to White/non-clinic; ¶ Compared to Black/non-clinic; # Compared to Hispanic/non-clinic.

established relationship with patients who receive prenatal care elsewhere. Providers, then, had little information on the non-clinic patients; in such low-information, uncertain medical environments,⁴² providers may be more likely to use stereotyping as a way of simplifying a situation and making decisions, especially given the time constraints under which they need to make quick judgments about complex issues.^{43,44}

The history-taking practices of providers regarding substance use may be particularly influenced by uncertainty. For example, limited treatment options are often available to pregnant women, which may increase the uncertainty that providers feel when documenting substance use. Further, knowledge gained from asking questions can lead providers to administer a toxicology screen, which can catalyze a process with uncertain outcomes. In many states (including Connecticut), a positive toxicology screen leads to the involvement of the state's child protective service agency and may have ambiguous and life-altering consequences for young children and their families.

History-taking discrepancies also may be due to differences at the prenatal care sites. Perhaps some aspect of the clinic culture encourages providers to ask all patients questions about risk factors during prenatal care. The clinic is part of a teaching hospital, which may emphasize taking complete medical histories for all patients. Something about the culture of the other sites may cause providers to resist such questioning. For example, the insularity of private offices may not lend itself to extensive history taking of every patient; potentially negative responses from the patient population may influence providers' decisions to discuss substance use with all pregnant women. In addition, all prenatal sites do not use the same form to document data, which could lead to different documentation practices during prenatal care.

To our knowledge, no previous research has compared the factors among racial groups (as documented in medical records) that providers discuss with pregnant women. Past research, however, has investigated the self-reported factors that influence providers' decisions to screen pregnant women for illicit substance use. Although race/ethnicity has not been cited among these predictors,^{33,39,40} these studies asked providers about the factors that they use to make screening decisions. Our findings point to the unstated influence that race may have on decision-making.

Research on other medical decisions can be useful as a comparison to our work. Lane and colleagues, for example, studied providers' decisions regarding the evaluation and reporting of child abuse among young children with fractures who were admitted to an urban hospital. They found similar results to our findings; their study indicated that minority children were more likely than White children to be both evaluated and reported for suspected child abuse, even after controlling for the likelihood of abusive injuries.⁴⁵

Implications

Biased documentation of substance use may increase the likelihood that Blacks and Hispanics are disproportionately referred to the local child protective service agency; however, biases also can harm White women. The lack of documentation regarding substance use in this population may indicate that White women who use illicit substances do not receive the subsequent treatment referrals that they need. Following a simple protocol to gather information on the use of substances would ensure that all women had the same opportunity to discuss their histories and thus receive appropriate and necessary treatment and care. Such practices would also help to limit biases in the referrals of newborns to child protective agen-

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cies. As the Institute of Medicine suggests, practice guidelines that are based on clinical evidence might be a useful tool to eliminate racial disparities in health care.¹ History-taking protocols, then, should be based on the factors that have been shown in the literature to be associated with unhealthy, problematic behaviors and substance use. Since previous research has illuminated factors that predict positive toxicology screens,^{36,41,46} the development of evidence-based protocols is feasible.

Such history-taking protocols should be standard at all prenatal sites, both public and private. Further, regardless of women's prenatal care experiences, most women deliver in hospitals, which gives hospital providers the opportunity to identify women who may need assistance and make unbiased testing decisions. The same protocols should apply equally to all hospital patients, regardless of their source of prenatal care.

Limitations

Despite the use of a large sample and our success in abstracting the medical records of eligible subjects (98.5%), our study had at least four limitations. First, this was a cross-sectional study, and all results rely on the accuracy of the data in the medical records. Second, we treated undocumented factors as issues that were not discussed with patients. If this assumption is incorrect, our find-

ings may be flawed; however, no reason exists to believe that this assumption's validity varies with race or ethnicity. Third, this study only examined low-income women, so our results can only be generalized to this population. Fourth, race/ethnicity was identified by providers and may not be accurate. Since patient histories are also identified and documented by providers, however, this factor should not jeopardize the validity of our findings.

CONCLUSIONS

We conclude that information on substance use is not consistently collected among White, Black, and Hispanic pregnant and delivering women. Both provider and organizational factors may influence decisions to discuss substance use with patients. The standard implementation of history-taking protocols would help reduce the influence of personal and organizational biases, and ensure that proper care is provided to all pregnant and delivering women.

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