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Characteristics of Low-income Racial/Ethnic Minority Pregnant Women Screening Positive for Risk Drinking

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Abstract

Background—The current study examined the prevalence and characteristics associated with alcohol risk among low-income, predominantly racial/ethnic minority pregnant women in an urban area.

Method—We surveyed 225 pregnant women receiving nutritional care.

Results—Twenty-six percent screened positive for alcohol risk. Current smoking status (AOR = 2.9, $p = .018$, 95% CI [1.2, 7.0]) and a history of marijuana use (AOR = 3.1, $p = .001$, 95% CI [1.6, 6.2]) were the strongest predictors of alcohol risk status.

Conclusions—This study underscores the need for screening for alcohol risk, smoking, and illicit drug use among low-income, racial/ethnic minority pregnant women and highlights the usefulness of the TWEAK in identifying alcohol risk in WIC settings.

Keywords

Brief screening; racial/ethnic minority; prenatal alcohol use; smoking; substance use; socioeconomic disparities

INTRODUCTION

Most recent reports indicate that 11% of pregnant women aged 15 to 44 in the U.S. report alcohol use [1], a rate that has decreased from 16% in 1995 [2]. Alcohol use during

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pregnancy has been highly associated with intimate partner violence, other substance use problems [3, 4], not receiving prenatal care, receiving Medicaid service [5], having a partner who drinks [6], unemployment, lower educational level, higher gravidity and parity, smoking during pregnancy, and single status [5,6].

Prenatal alcohol use puts mothers and their children at risk for pregnancy, birth, and neonatal complications, including miscarriage, low birth weight, stillbirth, and a range of lifelong disorders known as fetal alcohol spectrum disorders (FASDs; [7–9]). FASDs are one of the leading causes of physical, intellectual, and behavioral disorders and birth defects in the U.S. [10]. It is estimated that up to 24,000 FASD diagnoses are made every year, and 1 in 100 (approximately 7.4 million) children aged 0–17 are suspected to have FASDs [5,11].

Large socioeconomic disparities exist in prenatal alcohol use. A study of low-income, predominantly racial/ethnic minority women receiving nutritional services from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) in Southern California found that 23% of pregnant women reported alcohol use [12], putting them and their unborn children at greater risk for pregnancy, birth, and neonatal complications. Among those who reported prenatal alcohol use, a higher percentage of White non-Hispanic (30%) and Black non-Hispanic women (29%) reported alcohol use post-conception, compared to Hispanic women (21%; [12]). In addition, a higher percentage of White non-Hispanic women and Hispanic women reported quitting drinking after recognition of their pregnancy (57%; 67%), compared to Black non-Hispanic women (49%; 12). Many pregnant women tend to underreport their alcohol use as a result of the increasing awareness of the dangers of drinking during pregnancy and the associated social stigma [11,13]. Effective screening tools have been developed to identify alcohol risk in this population, such as TWEAK [14,16] and T-ACE [15,16], with TWEAK demonstrating insignificant but improved specificity [17].

Dawson et al. (2001) [18] showed that adding a question of whether a woman is a current smoker to the TWEAK screening instrument appeared to increase sensitivity and specificity for risk drinking among pregnant women who self-reported lifetime drinking. In addition, using an empirically-validated multiple-choice format to ask the status of cigarette smoking has improved disclosure of prenatal smoking by 40% relative to dichotomous format to the question of “Do you smoke?” [19].

The only study to assess the utility of TWEAK among low-income, predominantly racial/ethnic minority pregnant women was conducted more than a decade ago [12], and questions regarding smoking status and a history of other substance use were not included in the survey. The current paper reports results of a brief self-administered survey for low-income, predominantly racial/ethnic minority pregnant women at the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in an urban area and (1) examined whether the proportion of low-income, predominantly racial/ethnic minority pregnant women screening positive for alcohol risk with a local sample is similar to those reported in the literature, using the TWEAK screening instrument and (2) identified demographic characteristics, cigarette smoking status, and history of other substance use that correlate with positive screening results, using empirically-validated screening questions.

METHOD

Survey Procedures

Sites and Participants—Two-hundred twenty five pregnant women (97% of those approached) completed the survey at WIC locations in a densely populated urban area (i.e., Philadelphia, PA) during 2013 and 2014. All survey responders were enrolled at the WIC program.

Recruitment and Data Collection Procedures—Survey staff was stationed at a private booth within a WIC office and made periodic announcements to women in the waiting rooms about the opportunity to complete a brief survey. Interested pregnant women were invited to the private booth, where survey staff explained the study and obtained a verbal consent for voluntary survey participation. Nutritional counselors at WIC also asked pregnant women if they were interested in completing the survey and referred them to speak to the survey staff. After obtaining a verbal consent, the self-administered survey was completed by the participants, and survey staff assisted them with any questions or concerns. The survey took approximately five minutes to complete. At the completion of the survey, participants were thanked for their participation and received a small compensation (i.e., gift items from dollar stores). The current study was reviewed and approved by an institutional review board.

Survey Questions and Measures

Demographic questions—Questions in the survey assessed maternal age, ethnicity, race, gestational weeks, educational levels, and homelessness. Those in the "Other" race/ethnicity category included American Indian/Alaskan Natives, Asian/Native Hawaiian/Other Asians, and individuals identifying as more than one race. For those identifying as Hispanic, an additional question of specifying the country of origin was asked (i.e., Mexican, Puerto Rican, Cuban, Central American, and South American). Participants were also asked regarding current (within the past 30 days) housing status and history of homelessness. Currently homeless/temporarily housed was defined as living most of the time in the past 30 days in a shelter or on the streets/outdoors or temporarily housed in someone else's home or in an institution (jail, hospital, dorm, halfway house). History of homelessness was defined as ever spending the night in an outside place, a homeless shelter, or at someone else's place because the respondent did not have a place of their own.

Screening for alcohol risk—The TWEAK was included in the survey as a validated method of screening prenatal risk drinking [14]. This five-item tool assesses (T) tolerance for alcohol (i.e., How many drinks does it take to feel the first effect?); (W) worry or concern about drinking behavior (i.e., Have close friends worried or complained about your drinking in the past year?); (E) the need to have a drink in the morning (i.e., Do you sometimes take a drink in the morning when you first get up?); (A) experience of "blackouts" or amnesia while drinking (i.e., Has a friend or family member ever told you about things you said or did while you were drinking that you could not remember?); and (K) the self-perception of the need to cut down on alcohol use (i.e., Do you sometimes feel the need to cut down on your drinking?). The TWEAK has proved useful and demonstrated

high sensitivity and specificity across different ethnic groups [18, 20–22]. Responses to the TWEAK screening questions were calculated for each survey participant. Scores on the TWEAK range from 0 to 7 (zero to seven). A positive answer on the Tolerance and Worry questions each contributes two points, and the other three questions contribute one point each. A total of two or more points were considered positive for alcohol risk [14].

Smoking status—Smoking status was measured by having respondents identify whether they: (1) are smoking as much as before pregnancy; (2) are smoking but less during pregnancy; (3) quit smoking after becoming pregnant; (4) quit smoking before becoming pregnant; and (5) never smoked or smoked less than 100 cigarettes ever [19]. Respondents who identified as being in the first two categories were classified as being a “current smoker”. We focused our analyses on current smoking because smoking during pregnancy confers risk to the mother and the child [23].

Other questions relevant to substance and alcohol use—We also included questions based on the Substance Use Risk Profile-Pregnancy Scale developed by Yonkers et al. (2010) [24]. Specifically, respondents were asked whether they currently live with someone who drinks; whether they currently live with someone who smokes; whether they ever used marijuana; and whether they ever used any other substance. Because all individuals who reported use of any other substances also reported marijuana use, we created two variables: history of marijuana use (only) and history of other drug use.

Statistical Analysis

Descriptive analyses were used to identify the prevalence of alcohol risk among the sample based on TWEAK scores. Bivariate analyses were used to examine differences between pregnant women who screened positive for alcohol risk and those who screened negative for alcohol risk on the above-described characteristics using logistic regression analyses. Variables significantly associated with alcohol risk at the bivariate level ($p < 0.05$) were entered into a simultaneous logistic regression to produce odds ratios adjusted (AORs) for the presence of all other variables significant at the bivariate level.

RESULTS

Sample Characteristics

Participants ($N = 225$) were on average 25 (6) years old, were mostly Black/African American (51%) or Hispanic (38%; 67% of which was Puerto Rican), had graduated from high school or obtained a GED (66%), and were on average 21 (9) gestational weeks (Table 1). Twenty-seven percent of the respondents had experienced homelessness during the past 30 days, and 45% in their lifetime.

Correlates with Alcohol risk

Twenty-six percent of the women surveyed screened positive for alcohol risk. Table 2 shows sample characteristics of the pregnant women screening negative vs. those screening positive for alcohol risk. In bivariate analyses (Table 3), lifetime history of homelessness ($OR = 2.4$, $p = .004$, 95% CI [1.3, 4.5]), current smoking status ($OR = 4.3$, $p < .001$, 95% CI [2.0, 9.5]),

history of marijuana use only (OR = 3.0, $p = .001$, 95% CI [1.6, 5.5]), and history of other illicit substance use (OR = 4.3, $p = .016$, 95% CI [1.3, 14.2]) were significantly correlated with alcohol risk. Following multivariate analyses, current smoking status (AOR = 2.9, $p = .018$, 95% CI [1.2, 7.0]) and history of marijuana use (AOR = 3.1, $p = .001$, 95% CI [1.6, 6.2]) remained significant correlates with alcohol risk (see Table 3).

DISCUSSION

The prevalence of alcohol risk among this WIC pregnant sample, although higher than the general population, is similar to the previously reported rate (23% in O'Connor and Whaley, 2003 [12] vs. 26% in the current study). Alcohol risk among this sample of predominantly racial/ethnic minority pregnant WIC recipients was associated with a history of homelessness, being a current smoker, and having a history of marijuana or other drug use, with current smoking status and marijuana use only continuing to be the significant predictors of prenatal risk drinking in multivariate analyses. The findings are consistent with previous reports on self-reported smoking and substance use among the pregnant population [18,25]; except that the current study utilized empirically-validated screening instruments for alcohol risk, smoking, and other substance use whereas previous studies did not.

Our study found an association between TWEAK alcohol risk and smoking and other substance use among low-income, predominantly racial/ethnic minority pregnant women. In addition to screening for alcohol risk, the TWEAK screening instrument may also be useful in identifying not only women at-risk for drinking, but also for women at-risk for cigarette smoking and illicit substance use during pregnancy as two significant health threats to both the mother and their child [26]. Magnusson et al. (2005) [25] also found that participants who screened positive in the Alcohol Use Disorders Identification Tool (AUDIT) and/or Timeline Followback were more likely to have reported cigarette smoking and a history of illicit substance use, compared to those who tested positive only by means of biomarkers.

A history of being homeless indicates that pregnant women screening positive for alcohol risk may have other psychosocial issues that need to be addressed. The literature shows that a comprehensive care approach should be considered to treat substance-using pregnant populations [27, 28] and that this approach could be extended to pregnant women screening positive for alcohol risk. Commonly available, easily administered tools were effective in identifying these significant problems and should pave the way to early clinical interventions to reduce these risks as part of prenatal medical care or adjunctive social support services (e.g., WIC).

We recognize at least three limitations in the current study. Although we attempted to recruit women from participating clinics as systematically as possible during the study period, our sample may not represent all pregnant women receiving WIC from the participating clinics. Second, only women who voluntarily identified themselves as pregnant were asked to complete the survey, and all data were collected via self-administered questionnaires. Given stigma associated with drinking during pregnancy [11,13], our findings, like other studies relying upon self-report, likely under-estimate drinking, smoking, and illicit drug use in this population. More systematic studies using additional measures of drinking, smoking,

and illicit drug use for pregnant populations are needed. Third, the survey in the current study did not include questions to examine additional potential predictors of prenatal drinking including the level of acculturation, country of origin, place of birth [29], as well as mood, interpersonal support, marital status in order to keep the length of the survey relatively short.

NEW CONTRIBUTION TO THE LITERATURE

This study underscores the need for brief screening for alcohol risk among low-income, racial/ethnic minority pregnant women and highlights the usefulness of the TWEAK in identifying alcohol risk in WIC settings. Incorporating empirically-validated brief screenings for alcohol risk, smoking, and illicit drug use as part of prenatal care practice, as the current study demonstrated that these issues co-exist, could enhance health outcomes among low-income, racial/ethnic minority mothers and their children.

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Table 1

Sample Characteristics (N = 225)

	N	n	%
Demographics			
Age (M, SD) ^a	224	25.0	6.1
Race/Ethnicity	225		
White/Caucasian		11	4.9
Black/African American		114	50.7
Hispanic ^b		86	38.2
Other ^c		14	6.2
Educational Attainment	225		
Non-degreed		31	13.8
GED/Highschool		149	66.2
Post-secondary		26	11.6
Still in Highschool		19	8.4
Weeks Pregnant (M, SD) ^d	221	20.6	8.7
Currently Homeless/Temporarily Housed ^d	220	59	26.8
History of Homelessness ^e	225	101	44.9
Currently Living w/Someone who Drinks	204	33	16.2
Current Smoker	222	31	14.0
Currently Living w/Someone who Smokes	204	77	37.8
History of Marijuana Use (Only)	225	73	32.4
History of Other Drug Use	224	12	5.4

Notes:

^aThe mean (M) and standard deviation (SD) for this continuous variable are listed in the following columns where n and % are listed for categorical variables.

^bA total of 66 participants who identified as Hispanic provided additional information about how they identified themselves, with the majority (67%) identifying as Puerto Rican.

^cThose in the "Other" race/ethnicity category included American Indian/Alaskan Natives (n=3), Asian/Native Hawaiian/Other Asians (n=5), and individuals identifying as more than one race (n=6).

^dCurrently homeless/temporarily housed is defined as living most of the time in the past 30 days in a shelter or on the streets/outdoors or temporarily housed in someone else's home or in an institution (jail, hospital, dorm, halfway house).

^eHistory of homelessness is defined as ever spending the night in an outside place, a homeless shelter, or at someone else's place because the respondent did not have a place of their own.

Table 2**Sample Characteristics by the Risk of Alcohol Use**

	Non-Risk ^b			Alcohol Risk ^b		
	N	n	%	N	n	%
Demographics						
Age (M, SD) ^a	165	25.0	6.2	59	25.0	6.0
Race/Ethnicity	166		59			
White/Caucasian		10	6.0		1	1.7
Black/African American		85	51.2		29	49.2
Hispanic		59	35.5		27	45.8
Other		12	7.2		2	3.4
Educational Attainment	166		59			
Non-degreed		20	12.1		11	18.6
GED/Highschool		106	63.9		43	72.9
Post-secondary		25	15.1		1	1.7
Still in Highschool		15	9.0		4	6.8
Weeks Pregnant (M, SD) ^a	164	21.1	8.7	57	19.2	8.5
Currently Homeless/Temporarily Housed	162	42	25.9	58	17	29.3
History of Homelessness	166	65	39.2	59	36	61.0
Currently Living w/Someone who Drinks	145	23	15.9	59	10	17.0
Current Smoker	163	14	8.6	59	17	28.8
Currently Living w/Someone who Smokes	149	54	36.2	55	23	41.8
History of Marijuana Use (Only)	166	43	25.9	59	30	50.9
History of Other Drug Use	165	5	3.0	59	7	11.9

Notes:

^aThe mean (M) and standard deviation (SD) for this continuous variable are listed in the following columns where n and % are listed for categorical variables.^bThose in the Alcohol Risk group had a score on the TWEAK (Russel et al., 1994) of 2 or more.

Table 3

Bivariate and Multivariate Analyses on Correlates of Being at Risk

	Bivariates			Multivariates		
	OR	95% CI	p	AOR	95% CI	p
Demographics						
Age	1.0	[0.9–1.0]	0.996			
Race/Ethnicity			0.305			
White/Caucasian (reference category)	---	---				
Black/African American	3.4	[0.4–27.8]				
Hispanic	4.6	[0.6–37.6]				
Other	1.7	[0.1–21.2]				
Educational Attainment			0.097			
Non-degreed (reference category)	---	---				
GED/Highschool	0.7	[0.3–1.7]				
Post-secondary	0.1	[0.0–0.6]				
Still in Highschool	0.5	[0.1–1.8]				
Weeks Pregnant	1.0	[0.9–1.0]	0.160			
Currently Homeless/Temporarily Housed	1.2	[0.6–2.3]	0.618			
History of Homelessness	2.4	[1.3–4.5]	0.004	1.5	[0.8–3.0]	0.240
Currently Living w/Someone who Drinks	1.1	[0.5–2.4]	0.848			
Current Smoker	4.3	[2.0–9.5]	<0.001	2.9	[1.2–7.0]	0.018
Currently Living w/Someone who Smokes	1.3	[0.7–2.4]	0.466			
History of Marijuana Use (Only)	3.0	[1.6–5.5]	0.001	3.1	[1.6–6.2]	0.001
History of Other Drug Use	4.3	[1.3–14.2]	0.016	3.5	[0.9–14.0]	0.075