Identifying Disparities and Evaluating Prevention Programs Related to Perinatal Substance Use at the Local Level

S Taylor, MPH[1], R Schurig, MPH[1], L Jarvis, MA[1], B Isola, MPH[1], A Deckert, MD, MPH[1], J Snider, MPH[2]

[1]Shasta County Health and Human Services Agency, [2]Shasta Children and Families First Commission

Stephanie Taylor, MPH
Shasta County Health and Human Services Agency
Public Health
2650 Breslauer Way, Redding, CA 96001
(530) 229-8488
smtaylor@co.shasta.ca.us

Abstract

Background: Substance use during pregnancy is known to have adverse effects on an unborn child. Northern California women show higher rates of alcohol use and smoking during pregnancy compared to the statewide average, but local data were needed to determine local risk factors for perinatal substance use, evaluate prevention programs, and inform future interventions.
Methods: Mothers of six-month old babies (n=367) were surveyed via telephone on substance use behaviors and the screening and intervention practices of their prenatal care providers. Logistic regression models were used to assess the association between educational attainment, race/ethnicity, and payment source for prenatal care, and outcomes such as alcohol and tobacco use during pregnancy, exposure to secondhand smoke, and the practices of respondents' prenatal care providers.
Results: Non-Hispanic white women were significantly more likely than Hispanic women to smoke while pregnant, while lower maternal educational attainment was also significantly associated with greater likelihood of smoking. Women with Medicaid (compared to women with private insurance) showed increased likelihood of smoking before learning of their pregnancy. Women with private insurance were significantly more likely than women with Medicaid to use alcohol after learning of their pregnancies. Prenatal care providers screened almost universally for alcohol use and smoking but in some cases implemented brief interventions with women less likely to use these substances.
Implications: Results will be used to evaluate the impact of local programs addressing perinatal substance use, to inform future interventions, and to advocate for continued universal screening by prenatal care providers. Results may also be included in the upcoming Healthy Shasta County 2020 Strategic Planning process.

Background

- Shasta County is a rural county in Northern California with a population of 179,427 in 2007
  - Population density 46.6 persons per square mile
  - Three incorporated cities -- largest city is Redding (2007 population 87,130)
- Starting in October 2007, a survey was conducted by the Shasta County Health and Human Services Agency with women who were residents of Shasta County and gave birth to a baby during the 2007 calendar year.
- The survey included questions regarding their prenatal care and birthing experiences, as well as their behaviors before, during, and after their pregnancy.

Objective

Assess whether there are differences by race/ethnicity, income, or educational attainment in the following:
- Prenatal care providers' alcohol, tobacco, and drug screening practices
- Prenatal care providers' educational practices regarding the effects of substance use on a baby
- Respondents' use of alcohol and tobacco before and during their pregnancy

Methods

- Mothers' address information from birth records was used to search for a telephone number using Intelius Inc.'s People Search service.
- Correct phone numbers were obtained for 880 of 2087 women, with 367 mothers participating in the survey (17.6% overall response rate)
- Mothers were contacted around the time their baby was six months old
- Surveys were conducted in English and Spanish
- Survey results were weighted to ensure representativeness of the sample by age, race/ethnicity, educational attainment, and payment source for prenatal care (as a proxy for income)

Outcomes for women of Hispanic ethnicity and non-white, non-Hispanic status were compared using logistic regression to non-Hispanic white women while controlling for age, payment source, and educational attainment.

Outcomes for women with Medicaid or other government insurance were compared using logistic regression to women with private insurance while controlling for age, race/ethnicity, and educational attainment.

A single logistic regression model was fit to assess the overall effect of race/ethnicity, payment source, and educational attainment on each outcome.

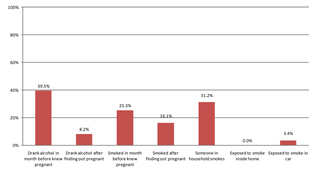
Women were categorized as follows:

Race/ethnicity	Income (payment source for prenatal care used as proxy)	Educational Attainment
Non-Hispanic white†	Private insurance†	Bachelor's Degree or higher
Non-Hispanic, non-white@	Medicaid or other government insurance@	Some college
Hispanic@	Self-pay*	High school diploma/GED, no college
Unknown*	Other, N/A, or none*	No high school diploma
		Unknown*

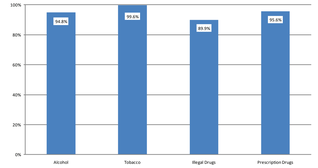
†Reference group @Comparison Group *Excluded from analyses

RESULTS

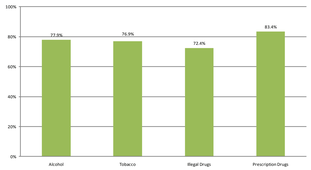
Exposure to Alcohol and Tobacco



Screened by Prenatal Care Provider for Substances



Provided Education During Prenatal Care About Effect of Substances on the Baby



Race/Ethnicity

	Non-Hispanic White†	Non-Hispanic, Non-White@	Hispanic@	Race/Ethnicity p-value in overall model
Provider asked if smoking cigarettes	99.6%	100.0%	100.0%	0.998
Provider counseled about smoking's effect on baby	74.3%	83.3%	**92.3%**	0.168
Provider asked if drinking alcohol	95.7%	91.4%	100.0%	0.341
Provider counseled against drinking alcohol	89.4%	88.9%	97.4%	0.872
Provider counseled about drinking's effect on baby	78.4%	72.7%	89.7%	0.532
Provider asked if using illegal drugs	92.1%	**82.0%**	100.0%	0.152
Provider counseled about effects of illegal drugs on baby	71.3%	76.5%	82.1%	0.535
Provider asked about use of prescription drugs	96.5%	97.2%	92.3%	0.702
Provider counseled about effects of certain prescription drugs on baby	81.3%	91.4%	94.9%	0.116
Anyone living in home smokes tobacco products	30.9%	40.5%	25.0%	0.896
Anyone smokes inside home	0.0%	0.0%	0.0%	N/A
Anyone smokes inside vehicle	4.1%	0.0%	2.5%	0.177
Smoked in month before knew pregnant	26.6%	33.3%	**7.9%**	0.260
Smoked after found out pregnant	17.3%	22.2%	**2.5%**	0.181
Drank alcohol in month before knew pregnant	42.4%	**16.7%**	40.0%	0.019
Drank alcohol after finding out pregnant	8.7%	8.3%	5.0%	0.914

Payment Source (Income)

	Private Insurance†	Medicaid/Other Government@	Payment source p-value in overall model
Provider asked if smoking cigarettes	99.3%	100.0%	0.998
Provider counseled about smoking's effect on baby	61.7%	**87.7%**	0.032
Provider asked if drinking alcohol	95.3%	96.1%	0.946
Provider counseled against drinking alcohol	86.3%	92.6%	0.566
Provider counseled about drinking's effect on baby	70.7%	85.1%	0.573
Provider asked if using illegal drugs	88.8%	94.1%	0.907
Provider counseled about effects of illegal drugs on baby	60.4%	81.6%	0.247
Provider asked about use of prescription drugs	96.6%	96.1%	0.721
Provider counseled about effects of certain prescription drugs on baby	80.4%	88.7%	0.844
Anyone living in home smokes tobacco products	12.6%	**43.9%**	0.002
Anyone smokes inside home	0.0%	0.0%	N/A
Anyone smokes inside vehicle	0.7%	5.3%	0.368
Smoked in month before knew pregnant	10.7%	**37.3%**	0.025
Smoked after found out pregnant	6.0%	24.3%	0.207
Drank alcohol in month before knew pregnant	45.7%	32.2%	0.065
Drank alcohol after finding out pregnant	13.3%	**4.5%**	0.041

Educational Attainment

	Bachelor's or Higher	Some College	HS Grad	No Diploma	Educational attainment p-value in overall model
Provider asked if smoking cigarettes	100.0%	99.3%	100.0%	100.0%	0.973
Provider counseled about smoking's effect on baby	50.9%	73.2%	85.1%	98.3%	<0.001
Provider asked if drinking alcohol	96.4%	95.1%	93.9%	100.0%	0.473
Provider counseled against drinking alcohol	85.5%	89.4%	90.0%	98.3%	0.391
Provider counseled about drinking's effect on baby	63.8%	74.8%	85.7%	94.8%	0.002
Provider asked if using illegal drugs	81.5%	92.1%	91.9%	100.0%	0.010
Provider counseled about effects of illegal drugs on baby	47.3%	70.5%	79.2%	91.4%	0.001
Provider asked about use of prescription drugs	98.2%	95.1%	96.0%	100.0%	0.0396
Provider counseled about effects of certain prescription drugs on baby	76.8%	79.6%	86.1%	98.3%	0.021
Anyone living in home smokes tobacco products	7.1%	23.8%	39.3%	56.9%	<0.001
Anyone smokes inside home	0.0%	0.0%	0.0%	0.0%	N/A
Anyone smokes inside vehicle	0.0%	2.1%	3.8%	10.2%	0.085
Smoked in month before knew pregnant	7.0%	13.3%	34.3%	56.9%	<0.001
Smoked after found out pregnant	3.5%	4.9%	22.4%	44.8%	<0.001
Drank alcohol in month before knew pregnant	43.9%	40.6%	43.4%	24.1%	0.623
Drank alcohol after finding out pregnant	14.3%	9.1%	5.7%	5.2%	0.744

Note: Percentages are unadjusted. †Reference group @Comparison group Bolded and underlined numbers indicate statistically significant difference in comparison to reference group

Conclusions

- Providers screened almost universally for alcohol, tobacco, and other drug use.
- Women with private insurance were more likely than women with Medicaid to report drinking alcohol after finding out about their pregnancies.
- Women with private insurance were less likely than women with Medicaid to be exposed to tobacco in the home and before finding out about their pregnancies.
- Lower maternal educational attainment was strongly associated with more frequent prenatal care provider education about the effects of substances and greater perinatal tobacco exposure.
- Hispanic ethnicity was associated with a lower likelihood of smoking but higher likelihood of being counseled about smoking's effects in comparison to non-Hispanic white women, but race/ethnicity was not associated in the overall model with these outcomes.
- Providers are screening consistently but sometimes missing opportunities to counsel women who are more likely to use certain substances about the effects of those substances on their babies.

Acknowledgements

Sara Chesarek, Sylvia Yzaguirre, and Manuel Meza, Shasta County Health and Human Services Agency, Public Health Branch
Laura Gore, Shasta County Health and Human Services Agency, Adult Services Branch, Roxanne Burke, Shasta County Health and Human Services
Julia DeLaRosa-Blair, Say It Twice Translator Services