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Risk during pregnancy—Self-report versus medical record

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Abstract

Objective—This study was undertaken to compare the frequencies with which physicians and patients report medical and behavioral risk factors during pregnancy, with particular attention to identification of women at risk for prenatal alcohol use.

Study design—The sample included 278 women, drawn from a randomized trial of T-ACE (alcohol screening questionnaire) positive pregnant women receiving obstetric care. Medical records and participants' self-reports were available for comparison.

Results—Physicians identified only 10.8% of women recognized as at risk for alcohol consumption by the T-ACE screening measure. In contrast, the physicians' records were more inclusive for medical risk factors than the participant's self-reports. Physicians were significantly more likely to correctly identify nonwhite participants as being at risk for prenatal alcohol use (odds ratio = 3.59, *P* = .026), compared with their white counterparts.

Conclusion—Self-report on the T-ACE questionnaire is more effective than medical records in identifying women at risk for prenatal alcohol use.

Keywords

Prenatal alcohol use; Alcohol consumption; T-ACE questionnaire

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Physicians often have difficulty identifying problematic alcohol use, despite its prevalence in medical and other settings.[1–7] Because the correct identification of problem drinking in women is even more difficult, physicians and other clinicians working in obstetric practices are particularly challenged.[8,9] In laboratory models, prenatal alcohol consumption at levels less than 1 drink per day adversely affects fetal growth and development.[10,11] Pregnant women reporting amounts greater than 1.3 drinks per week may actually be drinking at levels consistent with risk for birth defects.[12] Possible explanations include underreporting, or the possibility that the mean rate of alcohol consumed actually reflects brief, but heavier episodes of drinking that are averaged out over the course of several days or a week.[13]

However, because past drinking predicts drinking levels during pregnancy,[14] researchers have developed a number of screening instruments to facilitate the identification of alcohol use in the general population and among pregnant women.[15] These instruments include the Alcohol Use Disorders Identification Test (AUDIT), the T-ACE questionnaire, the TWEAK

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questionnaire, and the CAGE questionnaire.[16] Although each instrument has strengths and weaknesses,[17,18] some research has found that the relatively short 4-item T-ACE questionnaire outperforms obstetric staff assessment of alcohol use by pregnant women.[19]

We reviewed the medical records of women, all of whom screened positive for risk of problem drinking on the T-ACE, and compared the frequencies with which physicians and patients reported medical and behavioral risk factors during pregnancy. Because all the women were alcohol-screen positive, we hypothesized that a high percentage of the women would have been correctly identified in their medical records as being at risk for alcohol use.

Methods

This study draws on a sample of pregnant women drawn from a randomized trial of a single session brief intervention. Study staff recruited the participants attending faculty (30%), resident (8%), and nurse midwife practices (4%). The remainder (58%) of the sample were drawn from e-mail recruitment, Web site recruitment, referrals, or other sources. All the women were screened for risk of problem drinking, using the T-ACE.[20] The 4 T-ACE questionnaire items are listed in Table I. The T-ACE is positive with a total of 2 or more points. Two points are assigned if a respondent reports more than 2 drinks to the “tolerance” question. An affirmative response to the “annoyed,” “cut-down,” or “eye-opener” questions is given 1 point each. Women were eligible for the study if they scored 2 or higher on the T-ACE, had consumed alcohol while pregnant in the 3 months before study enrollment, reported gestation less than 28 weeks, intended to carry to term, and agreed to the study terms. The results of the brief intervention are discussed in detail elsewhere.[21]

This study focuses on baseline information documented in participants’ medical records. More than 90% of the study participants had medical records available, resulting in a sample of 278. There were no systematic differences among the participants with regard to medical record availability by practice site or recruitment method. Computerized and hard copy medical records were abstracted by using a structured form developed by the investigators. Approximately 20% of the records were dually reviewed for quality control and 90% of those records agreed.

The women’s self-reported medical problems were collected at both baseline (approximately 3 months into pregnancy) and follow-up (shortly after delivery). Each woman was asked to list all medical, gynecologic, and obstetric problems in an open-ended format. The potential risk factors were abstracted from the list of conditions reported by the subject.

The sociodemographic characteristics of the women in the sample were similar to those of women in the surrounding area. For instance, the median household income for the ZIP code where the subject resided was $55,361, compared with the Massachusetts median household income of $50,502 during the study time period.[22] Participants had a mean age of 31.4 years and a median education of 16 years. Most were European American (80%). Although they were pregnant at the time of study enrollment (median 11.5 weeks’ gestation), less than 20% of the women were abstinent. When they drank, they averaged 1.5 drinks per drinking day. Nearly 30% of the women had 2 or more drinks per drinking day while pregnant.

The SAS statistical package was used to analyze the data (version 8.2, SAS Institute, Cary, NC), and the descriptive results are reported as percentages, along with 95% CIs. To test for agreement between physicians and patients, McNemar’s tests were used with a Bonferroni corrected level of alpha for comparisons ($P < .002$) of 22 risk factors. In addition, logistic regression was used to identify maternal characteristics that predicted greater accuracy in the medical record in capturing the risk of prenatal alcohol use. A composite drinking measure incorporating drinks per drinking day and frequency of drinking days was used as 1 of the covariates in the model. Other risk factors included in the model were background other than European American, median household income, and education in years. The valid sample size for physician reports varied from 218 to 278, depending on the risk factor.

Results

Table II lists the percentage of participants with each type of risk factor, according to the source of information. The participant reports are based on the demographic and maternal medical histories obtained during the baseline interview of the study.

When comparing the participant and physician reports, there was almost no discrepancy regarding risk factors linked to height, age, and weight. Approximately 35% of women were at risk for complicated pregnancies because of these factors. However, these differences were extremely small. The difference between percentages was nonsignificant for all maternal demographic factors.

However, when asked for physical, obstetric, or gynecologic problems, participants consistently under-reported the medical conditions known as risk factors during pregnancy. These included autoimmune problems, neurologic problems, pulmonary disease, and hypothyroidism and other endocrine problems. Only 5.4% of participants reported having thyroid problems, but their physicians recorded that 13.0 % had a thyroid or endocrine condition. In addition, 2.5% of participants reported in the interview that they had a history of sexually transmitted diseases (STDs), compared with 18.0% of doctors. The difference was significant at $P < .05$ for medical history variables, both individually and as a group ($P < .0001$).

Although all the women in this study were at risk for prenatal alcohol use (T-ACE positive), doctors reported only 10.8% as at risk. The majority of participants (82.2%) whom the physicians did not consider at risk actually consumed alcohol during their pregnancy. This finding was consistent across recruitment sites (Fisher exact test $P = .014$, $P = .80$).

As physicians identified fewer than 1 in 5 women at risk for prenatal alcohol consumption, a logistic regression predicting physician recognition was developed, as shown in Table III. The effects of median household income for the ZIP code and education were nonsignificant. Physicians were more likely to correctly identify women at risk for prenatal alcohol consumption if those women were nonwhite (odds ratio [OR] = 3.59, $P = .026$). Given women with the same income, education, and prepregnancy alcohol consumption, physicians were more than 3.5 times more likely to correctly recognize a nonwhite women as at risk for alcohol consumption.

Comment

The main findings of this study, which compare self-report of medical and behavioral risk factors during pregnancy with those documented in the medical record, are that clinicians and their patients have different perspectives with respect to risk. Whereas clinicians documented substantially higher rates of medical risk factors than the patients did, these same clinicians identified only 10.8% of their patients as being at risk for alcohol use. In contrast, all the participating patients were alcohol-screen positive, and 82.2% of those who the physicians did not consider at risk actually consumed alcohol during their pregnancy.

Explanations for the discrepancy between the reported rates of medical risk factors include the possibility that the women simply did not report them, because either they were unaware of the significance of certain aspects of their medical history, or they chose not to do so during the study interview. The participants may also only have reported medical risk factors they believed to be most relevant to their pregnancy. More medical risk factors may have been reported if the participants were given a self-administered “review of systems.” The obstetric clinicians may have been particularly thorough in their documentation of medical risk factors.

Perhaps the most striking difference between the self-report and medical record involves risk for alcohol use. All participants were T-ACE alcohol-screen positive, and less than 20% were abstinent while pregnant. Possible explanations include reluctance by the participants to disclose their alcohol use to their obstetric clinicians, or that they modified their consumption on receiving obstetric care. Perhaps the participants were more willing disclose their drinking in a research setting, where more detailed information was obtained but would be kept confidential. Some obstetric clinicians may also have been reluctant to document alcohol use and may have noted only particularly heavy drinkers.

Potential limitations to the study include the fact that all participants completed the alcohol screen, but did not complete a comparable instrument for medical problems, as already noted. Indeed, they may have reported their most salient medical concerns. A positive T-ACE is not necessarily synonymous with severe drinking problems that may have been otherwise identified and documented by clinicians, who did note that 10.8% of their patients were at risk. On the other hand, a real strength of the study was the availability of medical records from diverse obstetric practices within the study hospital and elsewhere, so that it seems less likely that difficulties in identifying risk drinking were unique to 1 particular setting.

Alcohol use by pregnant women is difficult to determine, no matter how conscientious the clinician. Partly because of possible underreporting and partly because of lack of knowledge about the effects of even modest amounts of alcohol consumption, it seems that pregnant women seldom volunteer the type of information needed to identify potential risk drinkers. Of note, physicians were less likely to document that white women were at risk for prenatal drinking, even controlling for income, education, and prepregnancy alcohol use ($P = .026$). Indeed, pregnant women who drink come from all walks of life, and those who are older (35 years or more), non-Hispanic, well-educated (with more than a high school education), and employed have been found in large surveillance studies to be the most likely to drink prenatally.[23] The clinicians reported higher rates of illicit drug use ($P = .01$) and more cigarette smoking ($P = .5$) than the participants. Future research should include evaluations of the accuracy of clinician reports of these other behavioral risks and the development of appropriate screening instruments, if indicated. As alcohol is more commonly used than illicit drugs during pregnancy, it may be most efficient presently to screen all pregnant women with an instrument such as the T-ACE, which effectively identifies lifetime alcohol use disorders and not just current drinking, to ensure the best possible birth outcome.

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Table I

The T-ACE screening instrument[20]

T – **TOLERANCE**: How many drinks does it take to make you feel high?
A – Have people **ANNOYED** you by criticizing your drinking?
C – Have you ever felt you ought to **CUT-DOWN** on your drinking?
E – **EYE-OPENER**: Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover?

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Table II

Comparison of percentage of participants with risk factor, from participant and physician reports*

Risk factor	Participant	Physician	McNemar's test†
Maternal demographic factors	**35.25 (29.45–41.05)**	**44.60 (38.58–50.62)**	**10.56 (*P* = .0012)**
Maternal age	21.38 (16.38–26.38)	23.64 (17.80–29.48)	0.69 (*P* = .4054)
<15 y	0.00 (−0.18–0.18)	0.00 (−0.23–0.23)	
35 y or more	21.38 (16.38–26.38)	23.64 (17.80–29.48)	0.69 (*P* = .4054)
Maternal weight	10.78 (6.95–14.61)	10.90 (−0.14–3.94)	3.00 (*P* = .0833)
<100 lbs	0.00 (−0.18–0.18)	0.00 (−0.23–0.23)	
Obesity	10.41 (6.64–14.18)	10.90 (−0.14–3.94)	3.00 (*P* = .0833)
Maternal height	1.45 (−0.14–3.04)	1.34 (−0.39–3.07)	
<5 ft	1.45 (−0.14–3.04)	1.34 (−0.39–3.07)	
Maternal medical history	**27.64 (22.20–33.08)**	**65.11 (59.33–70.89)**	**74.31 (*P* < .0001)**
Previous preterm delivery	0.72 (−0.45–1.89)	9.09 (5.53–12.65)	20.17 (*P* < .0001)
STD history	2.52 (0.50–4.54)	17.99 (13.29–22.69)	43.00 (*P* < .0001)
Uterine anomalies	8.36 (4.93–11.79)	5.07 (2.31–7.83)	0.89 (*P* = .3458)
Unknown/unspecified	2.60 (0.55–4.65)	3.63 (1.25–6.01)	
Uterine fibroids	3.24 (0.98–5.50)	1.44 (10.13–18.75)	
Autoimmune problems	2.16 (0.27–4.05)	6.94 (3.32–10.56)	6.23 (*P* = .0126)
Neurologic problems	0.36 (−0.52–1.24)	4.76 (1.64–7.88)	7.36 (*P* = .0067)
Seizures	0.00 (−0.18–0.18)	2.75 (0.35–5.15)	
Thyroid/endocrine problems	5.40 (2.56–8.24)	13.00 (8.36–17.64)	17.00 (*P* < .0001)
Hypothyroidism	2.52 (0.50–4.54)	6.47 (3.40–9.54)	
Unknown or other	2.88 (0.73–5.03)	6.53 (3.45–9.61)	
Pulmonary disease	0.00 (−0.18–0.18)	1.85 (−0.18–3.88)	
Tuberculosis	0.00 (−0.18–0.18)	4.04 (1.23–6.85)	
Cardiac disease	0.36 (−0.52–1.24)	5.41 (2.21–8.61)	11.00 (*P* = .0009)
Mitral value relapse	0.36 (−0.52–1.24)	5.50 (2.24–8.76)	11.00 (*P* = .0009)
Hepatitis/liver disease	0.36 (−0.52–1.24)	4.05 (1.23–6.87)	8.00 (*P* = .0047)
Gastrointestinal disorders	2.16 (0.27–4.05)	9.50 (5.41–13.59)	16.20 (*P* < .0001)
Kidney	1.08 (−0.31–2.47)	19.28 (13.88–24.68)	38.10 (*P* < .0001)
Hypertension	3.24 (0.98–5.50)	6.36 (2.91–9.81)	2.27 (*P* = .1317)
Hematologic	2.88 (0.73–5.03)	3.13 (0.63–5.63)	0.14 (*P* = .7055)
Eclampsia/preeclampsia	1.80 (0.06–3.54)	29.50 (23.96–35.04)	73.20 (*P* = .0951)
Behavioral factors	**100.00**	**16.91 (12.32–21.50)**	
Street drugs	0.73 (−0.45–1.91)	3.48 (0.89–6.07)	6.00 (*P* = .0143)
Smoking/tobacco	4.72 (2.05–7.39)	9.96 (5.97–13.95)	0.53 (*P* = .4652)
Alcohol	100.00	10.79 (6.67–14.91)	

*95% CIs are given in parentheses.

†McNemar's test is omitted where it could not be calculated.

Table III

Coefficients from a logistic model predicting physician identification as at risk for alcohol consumption

	OR (95% CI)	χ^2	***P***
Whether nonwhite	3.593 (1.164–11.090)	4.955	.026
Median household income for ZIP code	17.567 (0.672–459.161)	2.961	.085
Composite prepregnancy drinking measure	1.005 (0.995–1.015)	1.300	.254
Education (y)	1.110 (0.903–1.363)	0.981	.322