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Prevention of Alcohol-Exposed Pregnancies Among Nonpregnant American Indian Women

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Abstract

Purpose.—The goal of this project was to evaluate an intervention on reducing alcohol-exposed pregnancies with nonpregnant American Indian women, with a focus on risky drinking and ineffective contraception use.

Design.—This study had a descriptive longitudinal study design, with follow-up every 3 months for 1 year.

Setting.—Three American Indian tribes in the Northern Plains.

Subjects.—Participants were 231 nonpregnant American Indian women.

Intervention.—Participants responded to drinking and contraception questions through the telephone and then received intervention materials via mail. Follow-up telephone surveys occurred at 3, 6, 9, and 12 months after the baseline call, and participants were again mailed intervention materials.

Measures.—Alcohol consumption and birth control measurements were modified from the Project CHOICES program. The intervention was based on motivational interviewing constructs.

Analysis.—Analysis techniques included covariate-adjusted generalized estimating equation methods and Bonferroni correction.

Results.—All of the alcohol consumption amount responses had significant decreases with each follow-up intervention session; the average change for the range of questions was -26% to -17% .

The proportion of those stating they did not use birth control decreased from 29% to 10% during the first 3 months.

Conclusions.—The intervention was successful in modifying self-reported drinking and contraception behaviors. This project is the only one to date that has focused on preventing alcohol-exposed pregnancies in nonpregnant American Indian women.

Keywords

Fetal Alcohol Spectrum Disorders (FASD); Alcohol Drinking; Contraception; American Indians; Prevention Research; Manuscript format: research; Research purpose: intervention testing/program evaluation; Study design: nonexperimental; Outcome measure: behavioral; Setting: local community; Health focus: social health; Strategy: skill building/behavior change; Target population age: adults; Target population circumstances: race/ethnicity; geographic location

INTRODUCTION

Alcohol consumption during pregnancy, especially binge drinking, has the potential to cause lifelong physical and cognitive effects.^{1–3} Fetal Alcohol Spectrum Disorders (FASD) is the continuum of outcomes in those prenatally exposed to alcohol and includes a diagnosis of fetal alcohol syndrome (FAS), partial FAS, alcohol-related neurodevelopmental disorders (ARNDs), and alcohol-related birth defects (ARBDs).⁴ FAS, the most damaging outcome of alcohol consumption during pregnancy, is characterized by facial abnormalities (i.e., small palpebral fissures, thin vermilion, smooth philtrum); evidence of growth retardation; evidence of neurodevelopmental abnormalities, including small head circumference; and, if possible, confirmed maternal alcohol consumption.^{5–7}

Although the American College of Obstetricians and Gynecologists and the U.S. Surgeon General advise against any drinking during pregnancy,^{8,9} the Centers for Disease Control and Prevention has found that between 1% and 3% of women report binge drinking during pregnancy, and 10% to 16% of women continue to consume moderate amounts of alcohol during pregnancy.^{1,10,11} Other studies find even higher rates of prenatal alcohol consumption. The National Birth Defects Prevention Study found that more than 30% of all women in one national sample reported drinking alcohol at some point during pregnancy, with 8.3% binge drinking and 2.7% drinking during all three trimesters of pregnancy.¹²

Prevention of FAS and alcohol-exposed pregnancies (AEPs) is an important public health effort for American Indians. Specifically, the Indian Health Service, the federal organization that provides health services to American Indian communities, reported that 47% to 56% of pregnant patients admitted to drinking alcohol during their pregnancies.^{13,14} Also, rates of FAS are estimated to be as high as 3.9 to 9.0 per 1000 live births among American Indians in the Northern Plains, compared with 0.3 per 1000 live births in a multistate surveillance study.^{3,15,16} Previous FASD prevention projects within American Indian communities have focused exclusively on pregnant women¹⁷ or on community-wide education,^{18–22} and previous efforts with nonpregnant women (i.e., Project CHOICES) have not focused specifically on American Indian women. Therefore, the implementation of

prevention efforts in three American Indian communities was not only timely, but was well received and successful.

There have been many types of interventions to prevent AEPs. The majority of these have focused on alcohol cessation among pregnant women.^{23,24} However, many recent studies now conclude that prevention of AEPs should begin preconceptionally, either by preventing unintended pregnancies through effective contraception or by discouraging alcohol consumption in women who are at risk for pregnancy.^{23,25} Studies have shown between 10% and 26% of sexually active women are at risk for AEP due to continued drinking while not preventing pregnancy.²⁴

One of the major efforts to decrease risk for AEP among nonpregnant women was Project CHOICES (Changing High-risk alcOhol use and Increasing Contraception Effectiveness Study). This intervention focused on reducing risk for AEP through alcohol reduction and pregnancy prevention using an in-person brief intervention and motivational interviewing sessions.^{24,26–30} Motivational interviewing is a counseling style that “guides the individual to explore and resolve ambivalence about changing [behavior], while highlighting and increasing perceived discrepancy between current behaviors and overall goals and values.”²⁶ Participants in the original Project CHOICES study were nonpregnant women from various settings in three Southern states who were at high risk for an AEP. They were randomized to receive information plus the brief intervention sessions or information only.^{26,31} There were four face-to-face motivational intervention sessions over several weeks, with a separate contraception counseling session. Each participant was given personalized feedback on how her risk for an AEP compared to that of other women of childbearing age, and the participants were asked to log daily drinking behavior, sexual activity, and contraception use as a way to evaluate behavior change over time.

Overall, the Project CHOICES intervention significantly decreased the risk of an AEP in the intervention group. Of the participants who completed all of the intervention sessions, 68.5% were no longer at risk for an AEP through either increasing birth control rates or decreasing binge drinking rates.²⁶ There was a statistically significant difference in risky drinking and contraception use between the two groups, with the intervention group having significantly lower drinking rates and increased contraceptive use 9 months after completing the five intervention sessions.²⁶

The purpose of this article is to describe the evaluation of a phone-based intervention, with measures and the intervention modified from the original Project CHOICES, with a group of nonpregnant American Indian women from three tribal communities.

METHODS

Design

This study had a descriptive longitudinal study design, with telephone surveys initiated every 3 months for 1 year.

Sample

Participants were American Indian women from three tribes in the Northern Plains. These tribes were chosen based on their own interest, as well as already-established relationships and project staff's past work with these communities. Participants enrolled in the project via a phone hotline dedicated specifically for this project, and the interviews were conducted by project staff. Prior to data collection, the three tribal communities approved this project.

Recruitment occurred from 2006 to 2008 using the toll-free phone hotline that was advertised via media materials. Information from focus groups and community meetings conducted prior to recruitment were incorporated into three posters and five radio ads, which used Native languages, images, and tribal members in the media campaign. Media materials were disseminated through local community liaisons, booths at local health fairs and community events, and informational tables set up at community centers, health clinics, and local tribal colleges. In addition, staff conducted community presentations and used local radio stations and newspapers. To evaluate materials, American Indian women from these tribes were asked their opinions about the media campaign. The evaluation revealed the media campaign was culturally appropriate and increased their knowledge about FASD and the effects of prenatal alcohol exposure.³²

Measures

After establishment of eligibility, participants answered questions about demographics (i.e., marital status, employment, income, and educational attainment), alcohol consumption, sexual activity, and contraception use. These questions were adapted from the Project CHOICES intervention^{24,26–30} and were completed at baseline and every 3 months thereafter for 1 year (five times total). For alcohol consumption, sexual activity, and contraception, the questions elicited information about behavior in the past 90 days (3 months), because previous research has shown that “such a window provides a good estimate of annualized drinking behavior.”³³

Alcohol Measurements.—Alcohol consumption variables were defined using the following questions: “Most drinks” = what is the most you had to drink at any one time in the past 90 days?; “average drinks” = on days when you drank in the past 90 days, how many drinks did you have on average?; “average per week” = how many drinks do you have in an average week?; “3+ drinks” = how many times during the past 90 days did you have three or more drinks on any one occasion? Participants were also asked if they intended to lower their alcohol consumption (yes/no).

Contraception Measurements.—Sexual activity was determined by asking if the participant had had sexual intercourse in the past 90 days. Using the question “what were you or your partner(s) using to keep you from getting pregnant,” participants stated any contraceptive method they used in the past 90 days. Participants were also asked how often they used their contraceptive method (“never,” “sometimes,” “usually,” or “always”) and to self-identify any reasons why they had sexual intercourse without using contraception. Finally, participants were asked if they intended to start using contraception at each sexual encounter (yes/no).

Readiness to Change.—To elicit information on how ready each participant was to change her alcohol and contraception behavior, a scale from 1 to 10 was used, with 1 meaning not at all ready to change behaviors and 10 indicating she was already changing her behaviors.

At-Risk Measurement.—To determine whether the risk for an AEP was reduced, participants were categorized into “at risk” if either their drinking was considered at-risk (defined as an average of more than four drinks in a day or seven drinks in a week) or their contraceptive practices were considered risky (using no method of protection at any one point or failure to always use a contraceptive method²⁶) or both.

Intervention

After calling the project’s hotline, verbal consent from the participants was obtained via the telephone. Eligibility was established through several demographic questions, including age (18–44 years); sexual activity (had vaginal intercourse during the past 3 months); drank alcohol in the past 3 months; and pregnancy status (nonpregnant). Participants were also excluded from the birth control analysis (but not the drinking analysis) for the following: use of IUD or Depo Provera, previous hysterectomy or tubal ligation, or trying to conceive.

At the end of the first telephone survey, participants who agreed to follow-up telephone interventions provided a current phone number and an appropriate time for future calls. Participants provided a current mailing address to receive the intervention materials, including personalized feedback on how their risk for an AEP—based on their contraceptive and drinking behavior—compared with other women of childbearing age. Participants also received a workbook based on motivational interviewing constructs for them to complete on their own time. This workbook included sections to log daily drinking behavior, sexual activity, and contraception use, and an area to assess readiness for change. The workbook was for their personal use only, and no information was elicited from these workbooks. The intervention materials were adapted from the original Project CHOICES intervention.

Follow-up phone calls occurred at 3, 6, 9, and 12 months after the initial baseline call. Staff members conducting the follow-up calls were trained on motivational interviewing techniques. If participants were not immediately available, up to five calls were made before determining the participants were lost to follow-up. The follow-up phone calls included an eligibility question on current pregnancy status and the same questions about contraception, sexual activity, and drinking behavior, as well as current readiness to change one’s contraceptive and drinking behavior. After each call, participants were mailed intervention materials.

Analysis

Data from all tribes were combined to maintain tribal confidentiality. Data were collected from 2006 to 2008. The baseline demographic variables “marital status,” “employment,” and “education level” had categories that were infrequently used, so categories were combined to reduce the number of levels (Table 1).

Analysis of repeated-measures count variables used generalized estimating equation (GEE) methods, using a random slope model to estimate individual change over time. The analysis included baseline demographic variables as covariates.³⁴ To examine differences between levels of baseline demographic variables, 99% confidence intervals (CIs) were obtained from the model and proportions were obtained by back-calculation (Table 2 and Figure 1; the reference categories do not have confidence intervals, and have estimates = 0). The most appropriate correlation structure was selected by model comparison methods using the AIC measure.³⁵ To investigate patterns in missing data due to loss of follow-up, differences in mean baseline responses between those who had no follow-up and those who had at least one follow-up interview were tested initially to determine whether baseline characteristics were related to the status of being missing. To determine whether changes were observed in “at-risk” behavior (defined above in the “At-Risk Measurement” section), a GEE model for total risk as binary (0–1) variable was estimated, and contrasts were used to determine the significance of changes over the course of the 12-month observational study. Bonferroni-corrected tests ($\alpha = 0.05/5 = 0.01$) were used to control for testing multiple end points. Analyses were performed using SAS v. 9.2–9.3 (SAS Institute, Cary, NC).

RESULTS

Demographics

A total of 231 American Indian women from three tribes were enrolled at baseline. In terms of demographic features, more than half had never been married; many (42%) were unemployed; educational status was somewhat equally distributed; and many (42%) had incomes of less than \$7000 per year (Table 1). Ten women became pregnant during the intervention and were therefore subsequently ineligible for future intervention sessions. Table 3 highlights the number of participants who completed each follow-up and those lost to follow-up.

Prior to the main analyses reported here, an analysis of the pattern of missing data was performed to ensure that baseline characteristics were not related to the missing status of cases. There were no significant demographic differences (i.e., marriage, education, employment) between those who had at least one follow-up session versus those who were lost to follow-up. Additionally, there were no significant differences in the proportion of participants not using protection at baseline between those who had no follow-up and those who had at least one follow-up interview. There were no significant differences in mean baseline responses for alcohol consumption between those who had no follow-up and those who had at least one follow-up interview. Thus, the amount of missing data, although large, is not functionally related to the baseline characteristics.

Drinking Behavior

One of the main objectives of the project was to change the current drinking behavior of the American Indian women surveyed. The average amount of alcohol consumed at baseline was 7.0 drinks per occasion. The number of drinks in an average week was 13.0 at baseline, with an average of 7.9 binge drinking episodes in the past 90 days and “most drinks at one sitting” at 9.7 drinks at baseline (Figure 2). For the item “willingness to change drinking

behavior,” the median score at the baseline period was 9 (scale: 0–10). The median score did not go below 8 at subsequent time points. The indication that women were willing to change their drinking behavior is important, as self-reports of current drinking behavior indicated high amounts of alcohol consumed.

In follow-up intervention sessions, all of the drinking behaviors exhibited linear trends except for the response of “3+ drinks,” which was defined as a piecewise linear model in time including a break point (i.e., knot) at 6 months (Figure 2). All of the alcohol consumption amount responses had significant decreases with each follow-up intervention session; the average change for the range of questions was –26% to –17%, with 99% CIs ranging from –41% to –7% (Figure 2). The response to “3+ drinks” during the prior 90 days had a decreasing trend for the first 6 months of the intervention (–13%; 99% CI, 40%–24%), which was not significant because of the large amount of variability (Figure 2). The statistical models are more stable during the first 6 months of the intervention than the last 6 months because of decreasing sample size and influential outlier observations.

Adjusting for marital status, income, education, and employment revealed significant differences in the drinking behaviors. Among those previously married, all of the drinking response averages were 35% to 192% greater than those never married (p values ranged from .001 to .104; Figure 1). There were no significant differences between being married and never married in drinking behaviors (minimum $p = .060$). Drinking was 26% to 55% lower on average across all responses in those who had graduated high school and had further education compared with those with less than a high school diploma (p values ranged from $<.001$ to .30). Income and employment showed no significant relationships with drinking behaviors (minimum score statistic $p = .477$ and .356, respectively). Table 2 shows results for the differences within covariates based on the GEE model and the back-calculated estimates and CIs for each category.

Birth Control and Sexual Activity Behavior

Another focus of the project was to evaluate if the intervention had any changes on use of birth control. After excluding 44 participants based on responses to contraceptive use (i.e., IUD, hysterectomy, or vasectomy) and 25 because they were trying to conceive, the number who met the inclusion criteria for sexual activity and use of birth control was 162. The “no protection” response variable was assessed for patterns in missing data to determine whether the losses to follow-up were related to prior observed responses, which would induce bias in the results. There were no significant differences in the proportion of participants not using protection at baseline between those who had no follow-up and those who had at least one follow-up interview ($p = .920$).

Of the $n = 162$ who were sexually active within the previous 90 days, 30% ($n = 49$) indicated using no protection at baseline on at least one occasion in the past 90 days while engaging in sexual activity. The top three reported reasons for not using protection at baseline included “didn’t care” or “was in a hurry”; alcohol or drug use; and “don’t know.” In addition, about half (56%) indicated at baseline that they intended to start using birth control every time they had sex.

When the data were analyzed for changes in “no protection” over the course of the intervention, adjusting for differences in demographics, the proportion of those stating they used “no protection” decreased 77% during the first 3 months, from 29% to 10% ($p < .001$; Figure 3). A break point at 3 months had the best model fit, and after 3 months the proportion of participants not using protection was constant for the remainder of the study ($p = .466$). None of the demographics had a significant effect on incidence of “no protection.”

Risk for AEP

The outcome of being at risk for an AEP was analyzed using the data from the protection portion of the analysis. The proportion of those at risk for an AEP at baseline was .54, meaning that approximately 54% of participants were at risk at baseline. The subsequent follow-up sessions found that less than 35% were at risk (Table 4). The risk for AEP decreased significantly ($p = .001$) between baseline visit and all other visits ($p < .001$); however, there were no differences between 3, 6, 9, and 12 months ($p = .531$).

DISCUSSION

Previous interventions have attempted to curb the high rate of FAS in American Indians by working with pregnant women who drink. However, it is now seen as vital to prevent AEPs before a woman even becomes pregnant. The evaluation of this program is the only one to date that has focused on preventing AEPs in nonpregnant American Indian women. The intervention was successful in reaching reservation-based groups of American Indian women that are often difficult to include in public health interventions because of the rural and remote nature of the communities. The project also appeared to successfully decrease risky behaviors that may lead to AEP by modifying a previously validated intervention on FAS prevention with nonpregnant women.

This intervention was successful in decreasing self-reported alcohol consumption among American Indian women in the sample. There were significant decreases in drinking behaviors over time, which is important because many of the women who called the hotline were extreme binge drinkers. Of note were the significant decreases in all drinking response questions with the exception of “3+ drinks.” As shown in Figure 2, the most drinks on any one occasion decreased from 9.8 to 5.3; the average number of drinks per week decreased from 12.9 to 3.3; and the average drinks on any one occasion decreased from 6.8 to 3.4. In addition, there were significant demographic differences, including more drinking among those previously married than those never married and drinking being higher in those with less than a high school diploma.

In terms of changes in contraception behavior, there was a significant increase in those reporting using protection from baseline to the 3-month follow-up. At baseline, a large number of women (nearly 30%) self-reported they were not using anything to protect against pregnancy while still being sexually active and not planning a pregnancy. The significant increase of birth control use at 3 months compared with baseline and the constant improvement of contraception behavior throughout the duration of the study, although not statistically significant, indicated the benefits of this intervention. Therefore, we believe this

information will inform public health efforts, both in terms of reducing alcohol-exposed pregnancies among American Indian communities and focusing on nonpregnant women.

Because the intervention appeared to produce significant changes in behavior and decrease risk for AEP in this sample, it is important to continue reaching out to American Indian women who are motivated to decrease drinking and interested in preventing pregnancy, and providing them with appropriate resources and referrals. In addition, projects should focus on those women who may not be as motivated but indicate risk for AEP. Future interventions in AEP prevention (decreasing drinking and unplanned pregnancies) should focus on those previously married and with less than a high school diploma, with concerted efforts aimed at culturally appropriate ways of increasing the acceptability of contraception. This includes understanding why many women “don’t care” or are “in a hurry” and therefore do not use contraception during sexual intercourse.

American Indian women living on reservations face unique issues in adopting preconception health behaviors to prevent AEP. One difficulty is access to contraception. For instance, there are long distances to the nearest health care setting to receive contraception, as well as issues with privacy (i.e., knowing or being related to the majority of people working at clinics). In addition, many American Indians find that drinking alcohol is normalized, or “entrenched and reinforced by many social and economic factors,”¹⁷ and that having social support from people who do not drink is difficult to find. Therefore, replicating this study with other tribal communities or focusing on both birth control and binge drinking behaviors with American Indian women must take into account issues of safely accessing birth control, as well as difficulties in maintaining sobriety.

Some limitations of this project include being a self-selected sample of American Indian women. Many of these were women who called the hotline because they were already motivated to change their drinking and/or contraceptive behaviors. It is therefore unknown whether a randomized sample would produce these significant changes or whether it was just the initial call to the hotline that instigated behavior change rather than the intervention. Similarly, all women who called the hotline received the intervention, and there was no comparison group, so it is not known whether there would be a difference in women who receive the intervention versus those who receive information only.

Other challenges in this study include the potential for response bias due to self-reporting and the large number of women lost to follow-up (i.e., did not complete all stages of the intervention), although those who completed the entire intervention saw significant changes and there were no significant differences in mean baseline responses for alcohol consumption between those who had no follow-up and those who had at least one follow-up interview. One possible obstacle to prevention was following up with participants via the telephone. Although the telephone was successful in initially reaching American Indian women and enrolling them at baseline, there was a high loss to follow-up rate over the year-long program. This high loss to follow-up is likely due to the phone intervention itself, rather than the characteristics of the women, because the phone did not allow for personal contact with an individual with whom the participant is comfortable (i.e., a local individual from the tribal community). Therefore, a true implementation of Project CHOICES, which

includes four in-person motivational interviewing sessions and a separate contraception session, is necessary to test the feasibility and effectiveness of this clinical intervention for American Indian women living on a reservation.

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SO WHAT? Implications for Health Promotion Practitioners and Researchers

What is already known on this topic?

As previous research has reported, the original CHOICES intervention, typically conducted in a face-to-face clinical setting over a shorter time period, produced significant changes in behavior.

What does this article add?

Modifications of the CHOICES intervention were made for a rural population of nonpregnant American Indian women who may be, at times, more transient, with better access to a telephone than transportation to a clinic. The modified intervention was successful in changing self-reported drinking and birth control behavior for American Indian women, albeit for a short amount of time and with a nonrandomized sample.

What are the implications for health promotion practice or research?

Given the high rates of FAS among many American Indian communities, additional assessments on the development and implementation of AEP interventions in tribal communities are necessary to improve the health and well-being of this population.

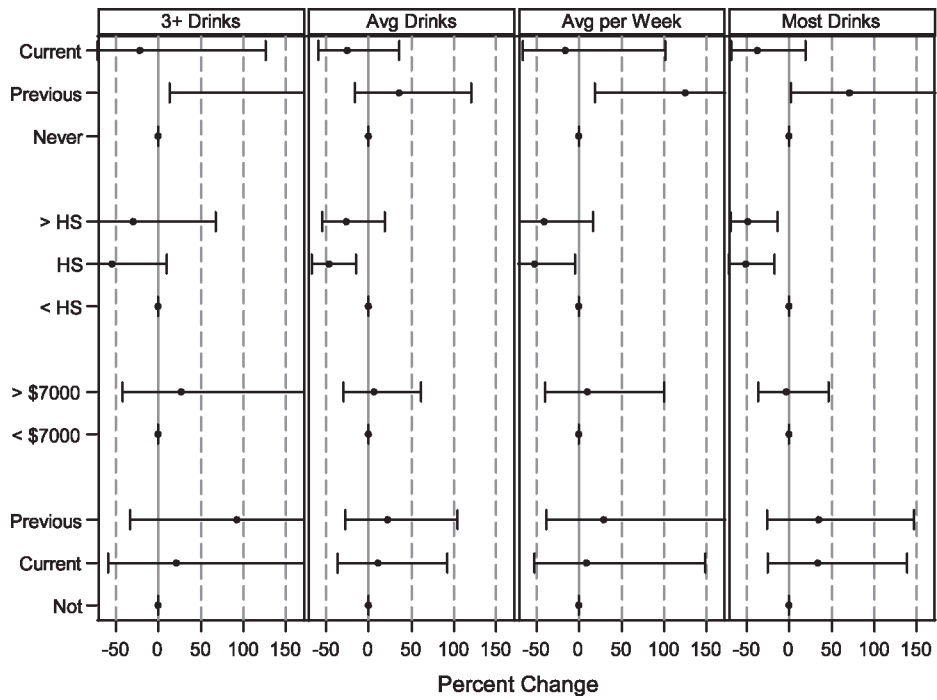


Figure 1. Effects of Covariates on Drinking Behaviors

3+ Drinks indicates three or more drinks on any one occasion; Avg Drinks indicates number of drinks on average on drinking days; Avg per Week indicates average drinks in a week; Most Drinks indicates most drinks at any one time.

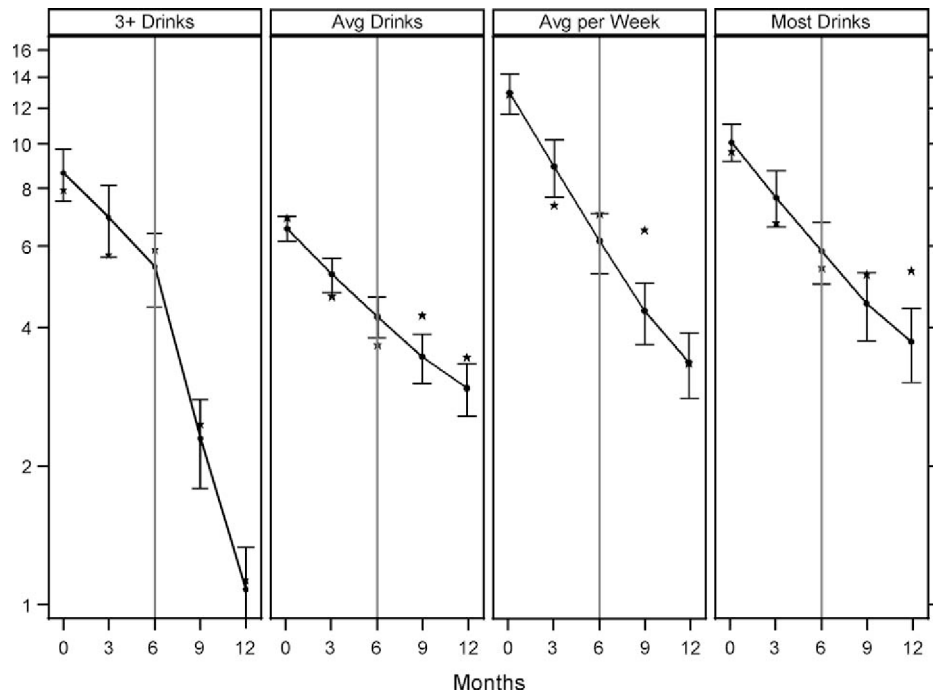


Figure 2. Time Trends of Drinking Behaviors at Each Visit, With 99% Confidence Intervals
 * Denotes raw mean; 3+ Drinks indicates three or more drinks on any one occasion; Avg Drinks indicates number of drinks on average on drinking days; Avg per Week indicates average drinks in a week; Most Drinks indicates most drinks at any one time.

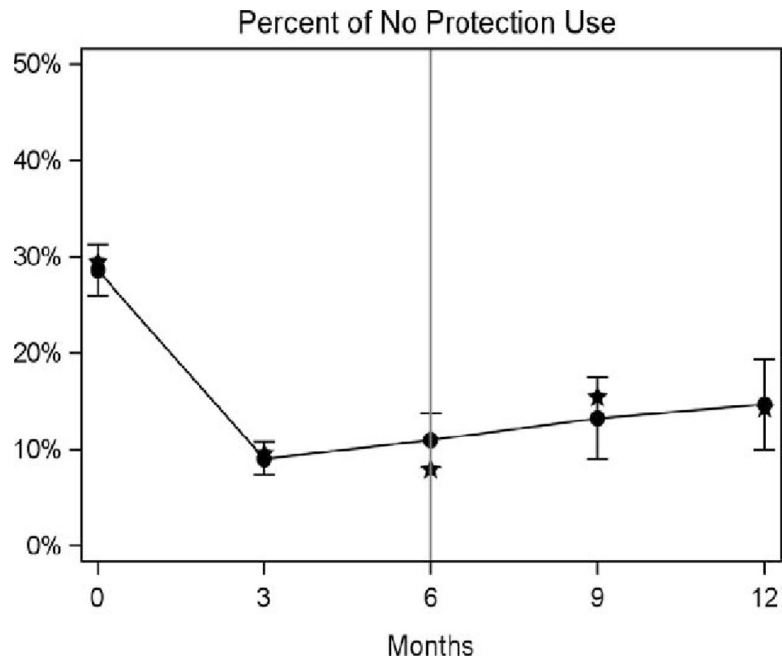


Figure 3. Time Trend for Percentage of Participants at Each Visit not Always Using Protection During Intercourse, With 99% Confidence Intervals

* Denotes raw mean.

Table 1

Demographic Description of Participants (N = 231)

Variable (No. Missing)	No. of Participants (%)
Marital status (4)	
Never married	136 (59.9)
Married	42 (18.5)
Previously married	49 (21.6)
Employment (1)	
Out of work	98 (42.6)
Employed/self-employed	69 (30.0)
Homemaker/student/unable to work	63 (27.4)
Education (0)	
Less than high school	88 (38.1)
High school graduate	81 (35.1)
More than a high school education	62 (26.8)
Income (2)	
Less than \$7000	98 (42.8)
Greater than \$7000	101 (44.1)
Don't know	30 (13.1)

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Table 2

General Estimating Equation Results for Four Drinking Outcome Variables

Dep Var	Ind Var	Coef	Z	p	Mean	99% CI for Odds Ratio		
						Lower	Upper	Upper
3+ drinks	Education	HS grad	-0.79	-2.3	0.0221	-0.55	-0.81	0.10
		>HS	-0.35	-1.0	0.2997	-0.30	-0.70	0.68
		<HS	RefCat			RefCat		
Marital status	Current	-0.24	-0.59	0.5566	-0.21	-0.73	1.27	
	Previous	1.07	2.92	0.0035	1.93	0.14	6.55	
	Never	RefCat			RefCat			
Job status	Current	0.19	0.46	0.6426	0.21	-0.59	2.56	
	Previous	0.66	1.60	0.11094	0.93	-0.33	4.53	
	Not employed	RefCat			RefCat			
Income	>\$7000	0.24	0.78	0.4325	0.27	-0.42	1.79	
	<\$7000	RefCat			RefCat			
	HS grad	-0.72	-3.5	0.0004	-0.51	-0.71	-0.18	
Most drinks	>HS	-0.66	-3.3	0.0010	-0.49	-0.69	-0.13	
	<HS	RefCat			RefCat			
	Current	-0.47	-1.9	0.0597	-0.38	-0.67	0.19	
Marital status	Previous	0.53	2.65	0.0080	0.70	0.02	1.86	
	Never	RefCat			RefCat			
	Current	0.29	1.30	0.1951	0.34	-0.25	1.39	
Job status	Previous	0.30	1.29	0.1970	0.35	-0.26	1.47	
	Not employed	RefCat			RefCat			
	>\$7000	-0.03	-2.1	0.8308	-0.03	-0.36	0.46	
Average per week	<\$7000	RefCat			RefCat			
	HS grad	-0.74	-2.7	0.0061	-0.52	-0.76	-0.04	
	>HS	-0.53	-2.0	0.0479	-0.41	-0.70	0.17	
Marital Status	<HS	RefCat			RefCat			
	Current	-0.18	-5.2	0.5996	-0.16	-0.65	1.02	
	Previous	0.81	3.27	0.0011	1.25	0.19	3.26	

Dep Var	Ind Var	Coef	Z	p	Mean	99% CI for Odds Ratio		
						Lower	Upper	RefCat
Job status	Never	RefCat						
	Current	0.08	0.25	0.8013	0.08	-0.53	1.49	
	Previous	0.26	0.88	0.3810	0.29	-0.39	1.74	
Income	Not employed	RefCat						
	>\$7000	0.10	0.43	0.6672	0.10	-0.39	1.01	
	<\$7000	RefCat						
Education	HS grad	-0.63	-3.5	0.0005	-0.47	-0.67	-0.15	
	>HS	-0.30	-1.6	0.1025	-0.26	-0.54	0.19	
	<HS	RefCat						
Marital status	Current	-0.29	-1.3	0.2057	-0.25	-0.59	0.35	
	Previous	0.31	1.63	0.1037	0.36	-0.16	1.21	
	Never	RefCat						
Job status	Current	0.10	0.49	0.6220	0.11	-0.36	0.92	
	Previous	0.20	0.99	0.3198	0.22	-0.27	1.04	
	Not employed	RefCat						
Income	>\$7000	0.06	0.40	0.6911	0.07	-0.30	0.62	
	<\$7000	RefCat						

* Dep Var indicates dependent variable; Ind Var, independent variable; Coef, coefficient; CI, confidence interval; HS, high school; and RefCat, reference category.

Table 3
 Number of Participants Completing Drinking and Contraception Questions (Out of N = 231 Participants at Baseline)

	Baseline, No. (%)	3 Mo, No. (%)	6 Mo, No. (%)	9 Mo, No. (%)	12 Mo, No. (%)
Drinking responses					
3+ drinks	225 (97.4)	113 (48.9)	76 (32.9)	59 (25.5)	46 (19.9)
Average drinks	227 (98.3)	112 (48.5)	73 (31.6)	58 (25.1)	45 (19.5)
Average per week	220 (95.2)	108 (46.8)	70 (30.3)	52 (22.5)	39 (16.9)
Most drinks	228 (98.7)	115 (49.8)	76 (32.9)	60 (26.0)	47 (20.3)
Total no. of participants for drinking analysis	231	120	81	62	51
Protection use	162 (70.1)	78 (33.8)	52 (22.5)	34 (14.7)	30 (13.0)

Table 4

Proportion of At Risk for Alcohol-Exposed Pregnancy

Time of Interview	No. of Participants	Proportion	Standard Deviation
Baseline	162	0.54	0.50
3 mo	78	0.29	0.46
6 mo	52	0.27	0.45
9 mo	34	0.35	0.49
12 mo	30	0.20	0.41