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RESPONDENT BIAS IN THE COLLECTION OF ALCOHOL AND TOBACCO DATA IN AMERICAN INDIANS: THE STRONG HEART STUDY

Kurt P. Schweigman, M.P.H., Richard R. Fabsitz, M.A., Paul Sorlie, Ph.D.,
and Thomas K. Welty, M.D., M.P.H.

Abstract: This study addresses the impact of assessment method (interviewer-administered questionnaire vs. self-administered questionnaire) and interviewers' demographic characteristics (gender, ethnicity, and residency) on responses to alcohol and tobacco questions. The study population included 1,522 men and women aged 45 to 74 from the Dakota Center of the Strong Heart Study (SHS), a multicenter study of cardiovascular disease in American Indians. Assessment method effects were greater for alcohol than tobacco but did not differ by interviewer characteristics.

Smoking and alcohol use/abuse are important risk factors for many health problems, and they need to be assessed as accurately as possible in health research to determine their true associations with disease. Exposure to both of these risk factors is often under-reported, and 'gold standards' for exposure are non-existent for alcohol or, in the case of cotinine for smoking, are expensive. While participants may give more accurate answers on a self-administered questionnaire, trained interviewers may be able to obtain more accurate answers by probing research participants. Similarly the interviewer's ethnicity and community of residence may influence the accuracy of responses. On one hand, when the participant and the interviewer are from the same community or are of the same ethnic group, communication may be easier. On the other hand, the participant may provide more accurate information on sensitive topics such as alcohol and tobacco to strangers.

Relatively little scientific evidence is available on whether an interviewer's gender, ethnicity, and residency can influence a participant's response to survey questions in an epidemiological study. Webster (1996) analyzed "the simultaneous effects of Hispanic and Anglo interviewer and respondent ethnicity and gender on response quality" and found that men

misconstrue sensitive item answers when questioned by women, whereas female respondents are unaffected by interviewer gender (p. 62). Webster (1996) also discovered Hispanic and Anglo respondents to be unaffected by ethnicity of the interviewer when asked sensitive questions. However, Wardrip's (1979) study of race of interviewer effects found response bias among both African American and Caucasian respondents on racial questions. Caucasian respondents gave African American interviewers more socially acceptable answers on racial questions than African Americans gave Caucasians. Wardrip (1979) stated that, "Self-administered questionnaires appear capable of overcoming to a great extent race-of-interviewer biasing effects on racial questions among whites but not among blacks" (p. 6038-A). Hochstim's (1967) study data found mail self-administered questionnaires elicited a substantially higher frequency of alcohol consumption in women than face-to-face interviews (interviewer-administered questionnaires). Weeks' (1981) study found responses to non-sensitive questions in American Indian children not to be affected by ethnicity of the interviewer. Aquilino and LoSciuto (1990) stated that, "minorities in general appear more prone than Whites toward socially desirable responding in sensitive surveys, regardless of interview characteristics" (p. 387). To our knowledge, data related to respondent bias in studies of middle and older aged American Indians are nonexistent. As increasing emphasis is placed on racial and ethnic representation in population-based studies, researchers are confronted with how best to design studies and collect data in populations with whom they have had little experience.

This study examines respondent bias in American Indian participants, as it relates to assessment method and interviewer characteristics. Respondent bias was defined as the tendency of a respondent's behavior to be influenced by his/her perspectives, anticipations, and feelings toward the interviewer and assessment method (Warwick, 1975). The impact of assessment method (interviewer-administered questionnaire vs. self-administered questionnaire) on responses to alcohol and tobacco questions was examined in this study. In addition, the effect of interviewers' demographic characteristics (gender, ethnicity, and residency) on participants' responses to alcohol and tobacco questions is assessed. In the participant communities, inquiries about alcohol consumption may be more sensitive than those about cigarette smoking. Respondents feel intimidated by questions relating to heavy drinking when compared to social drinking, since heavy drinking is perceived by most respondents to be socially undesirable. Consequently, we would expect under-reporting of alcohol use, and therefore, the validity of alcohol surveys are threatened (Bradburn, Sudman, Blair, & Stocking, 1978).

This study is an ancillary project of the Strong Heart Study (SHS), sponsored by the National Heart, Lung, and Blood Institute of the National Institutes of Health. The Strong Heart Study is the first large multi-center

study to examine cardiovascular disease rates and risk factors in 13 American Indian tribal groups in South Dakota/North Dakota (SD/ND), southwestern Oklahoma, and Arizona (Lee et al., 1990; Welty et al., 1995). Data from the SD/ND SHS field center are the focus of this study, since only that center used both questionnaire methods.

Methods

Study Population

The study population included 1,522 American Indian participants (43% male and 57% female) aged 45 to 74 during the SHS Phase 1 exam between July 1, 1989 to January 31, 1991. Participants for this sub-study were limited to the SD/ND center of the SHS. Almost all study participants were enrolled members of the Oglala Sioux Tribe of Pine Ridge, South Dakota, the Cheyenne River Sioux Tribe of Eagle Butte, South Dakota, or the Spirit Lake Tribe of Fort Totten, North Dakota comprising 56%, 26%, and 14% of participants, respectively. The remaining 4% of study participants were enrolled in other tribes, but reside in one of the above mentioned communities.

Measures

Ethnicity of interviewers was coded as American Indian vs. non-American Indian. Residency of interviewers was coded as those who live in the participant population communities vs. those who do not.

This study compared similar questions of alcohol and tobacco use on two separate methods of data collection; a self-administered American Indian-specific Health Risk Appraisal (HRA) questionnaire and an interviewer-administered questionnaire. Both methods of data collection were conducted in a clinical setting and administered within four hours of each other. The order in which the assessment methods were administered was not documented and provided some flexibility to accommodate clinic flow, although the HRA was usually administered first.

The interviewer-administered questions were part of the SHS personal interview form. This form was developed specifically for the SHS and was always administered by SHS interviewer staff as part of the SHS exam (see Appendix I). In addition to alcohol and tobacco questions, the SHS personal interview form included questions on gender, marital status, date of birth, years of education, American Indian blood quantum, tribal enrollment, family/health history, caffeine use, traditional values/culture, stress evaluation, and family income.

The self-administered questions were part of an American Indian-specific Health Risk Appraisal (HRA) (Han et al., 1994; Welty, 1988; Welty,

1989; Welty, Zephier, Schweigman, Blake, & Leonardson, 1993; see Appendix II). This instrument is primarily used as a health education tool to provide feedback to respondents through a calculated estimate of personal health risk with suggestions on how to reduce this risk.

Two similar questions on tobacco and four on alcohol were included in both questionnaires. The tobacco questions included smoking status (current smokers, ex-smokers, and never smokers) and the number of cigarettes smoked per day by current smokers. The alcohol questions addressed binge drinking, days per month having one or more drinks, number of drinks in a typical week, and, on the days when drinking, the number of drinks usually consumed (see Appendix I & II). All questions were analyzed as continuous variables (non-users coded as zero) except smoking status and binge drinking, which were analyzed categorically. Binge drinking was defined as having five or more drinks on an occasion.

Adjustments had to be made in reporting data for two alcohol questions to maintain comparability between the questionnaires. In the question asking, 'How many drinks of alcoholic beverages do you have in a typical week,' the self-administered questionnaire response allowed a maximum number of only 99, while the interviewer-administered questionnaire allowed a higher maximum number to be reported. Hence, 3 values of 112, 124, and 168 reported on the interviewer-administered questionnaire were changed to 99, to adjust to the limit of the self-administered questionnaire. In the question, 'On the days when you drink any liquor, beer, or wine, about how many drinks did you have on the average,' the self-administered questionnaire allowed a maximum of only 39, while the interviewer-administered questionnaire allowed a higher maximum number. Accordingly, the 4 values of 48 reported on the interviewer-administered questionnaire were changed to 39 to adjust to the limit of the self-administered questionnaire.

Participants were classified as non-drinkers based on the interviewer-administered questionnaire, if they reported having fewer than 12 drinks of alcoholic beverages in their entire life, or if they quit drinking more than one year prior to the time of interview. This classification was made in order to match the allowable responses on the self-administered questionnaire. All four alcohol questions were worded identically on both methods of assessment. However, in the interviewer-administered questionnaire method, the question on the number of drinks in a typical week was followed by 'Enter 1 for occasional drinkers.' Because the occasional drinker was coded as "1" on the interviewer-administered questionnaire, responses by assessment method were compared for participants only having two or more drinks per week. Also, a conversion key (i.e., 1 qt. of beer = 2.5 drinks, 0.5 gal. of wine = 16 drinks, etc.) was available to the interviewer to convert types of alcohol containers typically sold to the number of alcohol drinks they contain. The binge drinking question in the interviewer-administered questionnaire was coded as a

categorical variable, which matched the categorical responses of the self-administered questionnaire.

The interviewer-administered questionnaire method coded non-smokers as those reporting smoking fewer than 100 cigarettes in their entire life, ex-smokers as those smoking 100 or more cigarettes in their entire life but not a current smoker at time of interview, and current smokers as those reporting “yes” to the question, ‘Do you smoke cigarettes now.’ This category matched the response set on the self-administered questionnaire.

Of the 1,522 participants, 1,427 (94%) had sufficient information on both the self-administered questionnaire and the interviewer-administered questionnaire to be analyzed in this study. Reliability of participant interviews was subjectively judged by the interviewer immediately following the interviewer-administered questionnaire by selecting one of the five categories: very reliable, reliable, unreliable, very unreliable, or uncertain. Only the very reliable and reliable responses were used for this study, they comprised 1,385 (97%) of the 1,427 study participants completing both questionnaires. Interviews judged to be of lower reliability were generally the result of impaired cognitive ability (e.g., stroke, alcohol consumption) or language problem.

Statistical Measures

Statistical analyses involved the use of SAS version 6.10 for Windows (SAS Institute Inc., 1989a; SAS Institute Inc., 1989b). Assessment methods were compared by *t*-tests of mean paired differences for continuous variables and kappa or weighted kappa statistics for categorized data. A kappa of .75 or greater was considered excellent agreement, .40 to .75 was intermediate to good agreement, and below .40 was considered poor agreement (Gordis, 1996). Spearman rank correlations were used to measure agreement between continuous variables that were not normally distributed. McNemar’s test for equality of discordant pairs and 95% confidence intervals were calculated to determine the significance of bias by assessment method for categorical variables. *P*-values less than 0.05 were considered to be statistically significant.

Results

Table 1 presents the distribution by age and gender of the original sample of 1,522 as well as the number and percent who completed the self-administered questionnaire and were considered to be reliable or very reliable. Interviewer characteristics and number of interviews by interviewers for each category of interviewers are presented in Table 2; 59 interviewers conducted 1,385 interviews. Most of the interviews (72%)

Table 1
Total Number of Participants and Reliable Participants Taking the Self-Administered Questionnaire (SAQ) by Age and Gender. Strong Heart Study, Phase 1 (1989-1991), North/South Dakota Center.

Age	Men			Women			Total		
	Total	Men With SAQ	Percent-completing SAQ	Total	Women With SAQ	Percent-completing SAQ	Total	Total With SAQ	Percent-completing SAQ
45-54	325	286	(88)	413	386	(93)	738	672	(91)
55-64	225	200	(89)	288	261	(91)	513	461	(90)
65-74	108	100	(93)	163	152	(93)	271	252	(93)
Total	658	586	(89)	864	799	(92)	1522	1385	(91)

Numbers in parenthesis are percent of participants who were considered to have reliable interviews and who completed an SAQ.

Table 2
Distribution of Interviewers and Interviews Completed by Interviewer Characteristics. Strong Heart Study, Phase 1 (1989-1991), North/South Dakota Center.

Interviewer characteristics	Interviewers		Interviews completed	
	N	%	N	%
Gender				
Men	14	24	151	11
Women	45	76	1234	89
Ethnicity				
American Indian	36	61	1116	81
Non-Indian	23	39	269	19
Residency				
Community	30	51	1055	76
Non-community	29	49	330	24

were done by American Indian women residents of participant communities. There were no interviews done by non-American Indian men and only 15 interviews done by non-American Indian women from the participant communities. This reflects the fact that the study communities were on American Indian reservations.

Table 3 presents a comparison of the responses to alcohol and tobacco use questions by interviewer characteristics and method of assessment. Participants reported slightly higher percentages of alcohol use in the interviewer-administered questionnaire method, more so in the 'one or more drinks per day' question. However, the self-administered questionnaire method indicated a slightly higher percentage of tobacco use. The prevalence of alcohol use and smoking did not differ significantly by interviewer characteristics.

Comparison of mean paired differences for continuous variables are presented in Table 4 by assessment method and interviewer characteristics. The total for days in a typical month having at least one drink among current drinkers were significantly higher in the self-administered questionnaire. The same trend of higher reporting in the self-administered questionnaire was seen in each gender, ethnicity, and residency group, while significance was found among women, American Indian, and community interviewers. The average number of drinks per

Table 3
Percent Alcohol and Tobacco Use by Interviewer Characteristics and Method of Assessment. Strong Heart Study, Phase 1 (1989-1991), North/South Dakota Center

Interviewer Characteristics	% One or more days per month drinking		% One or more drinks per day		% Two or more drinks per week		% Binge drinking		% Current smokers	
	SAQ	IAQ	SAQ	IAQ	SAQ	IAQ	SAQ	IAQ	SAQ	IAQ
Total	33	37	35	44	22	27	25	26	51	49
Gender										
Men	38	38	41	48	27	29	27	29	59	57
Women	33	37	34	43	21	26	25	25	51	48
Ethnicity										
Indian	32	36	34	43	21	27	24	25	52	49
Non-Indian	37	42	41	47	24	25	26	27	48	46
Residency										
Community	32	36	33	43	21	26	25	25	51	48
Non-community	37	41	40	46	26	27	25	26	51	50

SAQ = Self-Administered Questionnaire

IAQ = Interviewer-Administered Questionnaire

Table 4
Mean Values, Mean Paired Differences and 95% Confidence Intervals of Alcohol and Tobacco Use by Interviewer Characteristics and Method of Assessment. Strong Heart Study, Phase 1 (1989-1991), North/South Dakota Center.

Interviewer characteristics	Assessment method		Difference (SAQ-IAQ)	95% C.I.
	SAQ	IAQ		
Days per month drinking for current drinkers				
Total	6.52	5.80	0.72**	(+0.30,+1.14)
Gender				
Men	6.22	5.58	0.64	(-0.56,+1.84)
Women	6.56	5.83	0.74*	(+0.29,+1.19)
Ethnicity				
American Indian	6.59	5.72	0.86**	(+0.39,+1.33)
Non-Indian	6.29	6.04	0.25	(-0.68,+1.18)
Residency				
Community	6.70	5.77	0.93**	(+0.43,+1.43)
Non-community	6.06	5.88	0.18	(-0.58,+0.94)
Average drinks per day for current drinkers				
Total	7.98	9.00	-1.03**	(-1.51,-0.55)
Gender				
Men	10.60	11.60	-1.00	(-2.40,+0.40)
Women	7.58	8.61	-1.03**	(-1.54,-0.52)
Ethnicity				
American Indian	8.00	9.13	-1.14**	(-1.72,-0.56)
Non-Indian	7.90	8.56	-0.66	(-1.43,+0.11)
Residency				
Community	8.08	9.26	-1.18**	(-1.78,-0.58)
Non-community	7.72	8.34	-0.63	(-1.38,+0.12)
Total drinks per week for current drinkers				
Total	12.36	13.61	-1.25	(-2.96,+0.46)
Gender				
Men	11.29	17.03	-5.74*	(-9.69,-1.79)
Women	12.53	13.04	-0.51	(-2.38,+1.36)
Ethnicity				
American Indian	11.63	13.12	-1.49	(-3.14,+0.16)
Non-Indian	15.04	15.41	-0.37	(-5.64,+4.90)
Residency				
Community	12.05	13.52	-1.47	(-3.29,+0.35)
Non-community	13.12	13.83	-0.71	(-4.63,+3.21)

Table Continues

Table 4 (continued)
 Mean Values, Mean Paired Differences and 95% Confidence Intervals of
 Alcohol and Tobacco Use by Interviewer Characteristics and Method of
 Assessment. Strong Heart Study, Phase 1 (1989-1991), North/South
 Dakota Center

Interviewer characteristics	Assessment method SAQ	method IAQ	Difference (SAQ-IAQ)	95% C.I.
Cigarettes smoked per day by current smokers				
Total	13.27	13.24	0.03	(-0.38, +0.44)
Gender				
Men	14.14	13.70	0.45	(-0.82, +1.72)
Women	13.14	13.18	-0.04	(-0.47, +0.39)
Ethnicity				
American Indian	13.25	13.21	0.04	(-0.40, +0.48)
Non-Indian	13.37	13.39	-0.02	(-1.05, +1.01)
Residency				
Community	13.18	13.16	0.02	(-0.45, +0.49)
Non-community	13.54	13.51	0.03	(-0.78, +0.84)

Totals may not add exactly due to rounding.

SAQ = Self-Administered Questionnaire

IAQ = Interviewer-Administered Questionnaire

* $p < .01$

** $p < .001$

day for current drinkers when they drink was significantly higher in the interviewer-administered questionnaire. The same trend of higher reporting in the interviewer-administered questionnaire was seen in each gender, ethnicity, and residency groups, while significance was found among women, American Indian, and community interviewers. The total number of drinks in a typical week for current drinkers (defined as having two or more drinks per week) was significantly higher in the interviewer-administered questionnaire. The same trend of higher reporting in the interviewer-administered questionnaire was seen in each gender, ethnicity, and residency group, while significance was found only among men. The average number of cigarettes smoked per day for current smokers was only slightly higher in the self-administered questionnaire. Similar reporting of cigarette use in the self-administered questionnaire and interviewer-administered questionnaire was seen in each interviewer group.

Table 5 presents agreement of zero and one or more days in a typical month that participant drinks, categorized by assessment method. The total kappa agreement was excellent, and in each gender, ethnicity, and residency group the kappa statistic was greater than 0.79. Significantly more participants (81) reported drinking on one or more days per month only on the interviewer-administered questionnaire than those (33) who only reported drinking on one or more days per month on the self-administered questionnaire. Table 5 also presents categorized agreement of zero and one or more drinks per day by assessment method. The total kappa agreement was good, and in each gender, ethnicity, and residency group the kappa statistic were greater than 0.71. Significantly more participants (140) reported drinking one or more drinks per day only on the interviewer-administered questionnaire than those (25) who only reported drinking on the self-administered questionnaire. Table 5 also presents categorized agreement of zero and one or more times binge drinking in the past month by assessment method. The total kappa agreement was excellent, and in each gender, ethnicity, and residency group the kappa statistic was greater than 0.80. More participants (51) reported binge drinking only on the interviewer-administered questionnaire than those (40) who reported binge drinking only on the self-administered questionnaire but this difference was not statistically significant. Table 5 also presents categorized agreement of zero, one, and two or more drinks consumed in a typical week by assessment method. The total weighted kappa agreement was good, and in each gender, ethnicity, and residency groups the weighted kappa statistic was greater than 0.58. One-hundred-sixty respondents reported they drank one drink per week on the interviewer-administered questionnaire but reported zero drinks per week on the self-administered questionnaire, compared to only one respondent who reported drinking one drink per week on the self-administered questionnaire but reported zero drinks per week on the interviewer-administered questionnaire. This could be explained by the "Enter 1 for occasional drinkers" notation on the interviewer-administered questionnaire described in the methods section. Finally, Table 5 presents smoking status agreement of never smokers, ex-smokers, and current smokers by assessment method. The total weighted kappa agreement was excellent, and in each gender, ethnicity, and residency group the weighted kappa statistic was greater than 0.84. Only one person reported being a current smoker on the interviewer-administered questionnaire while responding "never smoked" on the self-administered questionnaire, compared to 25 never smokers on the interviewer-administered questionnaire and who reported they were current smokers on the self-administered questionnaire.

Spearman rank correlations were strong in all total comparisons by method of assessment for continuous variable questions: currently smoking one or more cigarettes per day, drinking alcohol one or more days per month, having two or more alcoholic beverages in a typical week, and

Table 5
 Comparison of Assessment Methods for Alcohol Use and Smoking. The Strong Heart Study, Phase 1 (1989-1991), North/South Dakota Center.

Self-Administered Questionnaire	Interviewer-Administered Questionnaire						Statistical Tests*
Days/month drinking	0 days		1 or more days		total		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
0 days	804	60.6	81	6.1	885	66.7	Kappa=0.81
1 or more days	33	2.5	409	30.8	442	33.3	McNemar's=20.2 (1 df) <i>p</i> -value=.001
total	837	63.1	490	36.9	1327	100.0	
Drinks/day	0 drinks		1 or more drinks		total		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
0 drinks	721	54.3	140	10.6	861	64.9	Kappa=0.74
1 or more drinks	25	1.9	441	33.2	466	35.1	McNemar's=80.2 (1 df) <i>p</i> -value=.001
total	746	56.2	581	43.8	1327	100.0	
Binges/month	0 times		1 or more times		total		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
0 times	943	71.4	51	3.9	994	72.2	Kappa=0.82
1 or more times	40	3.0	287	21.7	327	24.8	McNemar's=1.3 (1 df) <i>p</i> -value=.249
total	983	74.4	338	25.6	1327	100.0	

Table Continues

Table 5 (continued)
 Comparison of Assessment Methods for Alcohol Use and Smoking. The Strong Heart Study, Phase 1 (1989-1991), North/South Dakota Center.

Self-Administered Questionnaire	Interviewer-Administered Questionnaire								Statistical Tests*
	0 drinks		1 drink		2 or more drinks		total		
	n	%	n	%	n	%	n	%	
Drinks/week									Weighted Kappa=0.62
0 drinks	739	55.6	160	12.0	92	6.9	991	74.6	
1 drink	1	0.1	23	1.7	23	1.7	47	3.5	
2 or more drinks	9	0.7	42	3.2	239	18.0	290	21.8	
total	749	56.4	225	16.9	354	26.7	1327	100.0	
Smoking status	Never smoked		Ex-smoker		Current smoker		total		Weighted Kappa=0.87
	n	%	n	%	n	%	n	%	
Never smoked	225	16.5	40	2.9	1	0.1	266	19.5	
Ex-smoker	32	2.4	361	26.5	8	0.6	401	29.4	
Current smoker	25	1.8	17	1.2	655	48.0	697	51.1	
total	282	20.7	418	30.6	664	48.7	1364	100.0	

*p-values based on McNemar's Test for equality of discordant pairs; chi-square, Kappa and Weighted Kappa.

Totals may not add exactly due to rounding.

average number of drinks on the days when drinking alcohol. The correlations of responses by method of assessment for the total sample ranged from 0.65 to 0.89. Similar results were found for each gender, ethnicity, and residency group of the interviewer; the correlations ranged from 0.61 to 0.91.

Discussion

We found the differences in responses between assessment methods was much greater for alcohol questions than for tobacco questions. Interviewer-administered questionnaires elicited significantly higher amounts of alcohol usage for current drinkers than the self-administered questionnaire. In contrast, the self-administered questionnaire elicited higher average days per month drinking. One important difference in the methods was the interviewer-administered questionnaire had a key for the amount of alcohol per container (see Appendix I). Probing by interviewers using this more precise and objective device may have led to higher amounts of alcohol being reported on the interviewer-administered questionnaire. The only identical alcohol question on both interview forms was the days per month drinking alcohol for current drinkers which may have been more accurately reported on the self-administered questionnaire (Table 4), assuming higher levels were more accurate. The results presented here are similar to those reported in Aquilino's (1994) study, which found Hispanic respondents reporting significantly more recency of alcohol use and drunkenness on the self-administered questionnaire than to the same race interviewers.

Responses to tobacco questions were more consistent across methods, although 25 respondents reported being never-smokers to interviewers while they identified themselves as current smokers on the self-administered questionnaire. This may be the result of a bias in which a few current smokers may be reluctant to admit to interviewers they smoke.

Interviewers elicited a higher proportion of participants as current drinkers, more than were reported on the self-administered questionnaire. Respondents may have been more likely to report their drinking status accurately to interviewers who already were likely to know they drank.

The discrepancies in responses on the self-administered and interviewer-administered questionnaires may have been due to: (a) errors in completing the self-administered questionnaire, (b) misinterpretation of the questions on the self-administered questionnaire or misinterpretation of questions asked by the interviewer, or (c) under reporting of alcohol and tobacco use by participants. It is impossible in this study to determine which of these factors may have contributed to the discrepancies. Regardless of whether data are collected by the self-administered or the interviewer-administered questionnaires, researchers need to design their instruments to obtain the most accurate responses possible. In addition

screening for alcohol and tobacco use is especially important clinically, so that appropriate counseling and treatment can be provided to patients who smoke or abuse alcohol. The Indian Health Service has recently validated a self-administered questionnaire for screening prenatal patients for alcohol use (Bad Heart Bull, Kvigne, Leonardson, Lacina, & Welty, 1999). Screening for alcohol abuse is also important in elderly populations, including elderly American Indians so that persons with alcohol problems can be appropriately diagnosed and treated (Lowe, Long, Wallace, & Welty, 1997).

There were several limitations of this study, including the following: (a) most interviews [72%] were done by American Indian women who lived in the communities, thus fewer observations [28%] were done in the other characteristic groups, and no interviews were done by non-American Indian men who lived in the communities; (b) the self-administered questionnaire was only used in the SHS sites in North and South Dakota; (c) an alcohol conversion key was available on the interviewer-administered questionnaire form, but not on the self-administered questionnaire; (d) it was not documented which interview form was given first; (e) it was not documented how many respondents needed assistance in filling out the self-administered questionnaires; (f) two of the alcohol questions differed slightly on the self-administered and interviewer-administered questionnaires; (g) the self-administered questionnaire was limited to amounts of allowable responses on the form; (h) neither the SHS interviewer-administered questionnaire nor the self-administered American Indian specific HRA used in this study can be considered a gold standard in the collection of data; and (i) we are unable to measure the effect of assessment method [interviewer vs. self-administered] when they are not administered on the same day or in a particular sequence.

The study does not demonstrate a clear advantage in the use of a self-administered questionnaire or interviewer-administered questionnaire to obtain alcohol and tobacco data in a middle-aged to elderly American Indian population. Rather it documents inconsistency of responses between the two methods of obtaining alcohol data with higher responses provided by the self-administered questionnaire for days per month drinking, but higher responses to the interviewer-administered questionnaire for amounts drinking per occasion. The study demonstrated no overall significant differences in assessment method effects on alcohol or tobacco use either by self-administered questionnaire vs. interviewer-administered questionnaire, or by gender, ethnicity, or community of residence of interviewers. Thus, we suggest that interviewers for future studies among American Indians could be drawn from within or outside the community without regard to gender or American Indian status. Whether these results can be applied to questions other than those regarding alcohol and tobacco consumption remains unknown.

Further research is needed to assess differences in assessment methods and interviewer characteristics. Extension of data beyond alcohol

and tobacco consumption would also be useful. Another useful study for the future would involve the comparison of gender concordance and discordance between the interviewer and interviewee.

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Authors' Note

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Appendix I

Strong Heart Study Personal Interview Form – Interviewer-Administered Questionnaire. Tobacco and Alcohol Questions.

Have you smoked at least 100 cigarettes in your life?

1=yes

2=no (skip the following tobacco questions)

9=unknown

Do you smoke cigarettes now?

1=yes

2=no

On the average, How many cigarettes (did/do) you usually smoke a day?

In YOUR ENTIRE LIFE have you had at least 12 drinks of any kind of alcoholic beverage?

1=yes

2=no (skip the following alcohol questions)

How long ago did you last drink any kind of alcoholic beverage?

Indicate number of days, months, or years of their last drink.

Number of days.....

(if they drank today, fill in zero days)

OR

Number of months.....

(if they drank this month, fill in zero months)

OR

Number of years.....

(if they drank this year, fill in zero in years)

If more than one year, skip the following alcohol questions.

Appendix I Continues

Appendix I (continued)

Strong Heart Study Personal Interview Form – Interviewer-Administered
Questionnaire. Tobacco and Alcohol Questions.

How many drinks of alcoholic beverages do you have in a typical week?
Enter 1 for occasional drinkers.

- 1 qt. of beer=2.5 drinks
- 1 pt. of beer=1.5 drinks
- 1pt. of wine=4 drinks
- 1qt. of wine=8 drinks
- 0.5 gal. of wine=16 drinks
- 1 pt. of hard liquor=12 drinks
- One-fifth of hard liquor=19 drinks
- 1 case of beer (12 oz. cans)=24 drinks
- 6 pack of beer (12 oz. cans)=6 drinks

Add up the total of drinks in a typical week and fill them in the box of this question. Round up to nearest whole number if fraction is greater than or equal to 0.5.

On how many days in a typical month do you have at least one drink?
Indicate number of days per month.

On the days when you drank any liquor, beer, or wine, about how many drinks do you have on the average? Indicate number of drinks per day.

How many times during the past month did you have 5 or more drinks on an occasion? Indicate times per month. (Enter zero if subject quit drinking more than one month ago.)

Appendix II
Indian Specific Health Risk Appraisal Form – Self-Administered
Questionnaire. Tobacco and Alcohol Questions.

CIGARETTE SMOKING

How would you describe your cigarette smoking habits?

_____ Never Smoked _____ I smoke now _____ I have quit

IF YOU SMOKE CIGARETTES NOW:

How many cigarettes a day do you smoke?

IF YOU HAVE QUIT:

What was the average number of cigarettes you smoked per day?

How many drinks of alcoholic beverages do you have in a typical week?
(1 drink = a can or bottle of beer, a small glass of wine or shot of hard liquor)

On how many days in a typical month do you have at least one drink?

On the days when you drank any liquor, beer or wine, about *how many drinks* did you have on the average?

How many times during the past month did you have 5 or more drinks on an occasion?

RECRUITMENT OF AMERICAN INDIANS IN EPIDEMIOLOGIC RESEARCH: THE STRONG HEART STUDY

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Abstract: This paper describes the methods used to recruit American Indian (AI) populations for the Strong Heart Study (SHS), a community-based study of cardiovascular disease (CVD) and its risk factors in AI men and women. Recruitment strategies included personal contact by recruiters and drivers/recruiters in remote areas, SHS staff participation in community activities, and mass media. A total of 4,549 participants aged 45-74 years were recruited from 13 American Indian tribes and communities. Overall participation rates were 72%, 55%, and 62%, respectively, for the three study centers (Arizona, the Dakotas, and Oklahoma). Participant feedback and educational material related to risk factor reduction and promoting a healthy lifestyle were emphasized. Participants were likely to be female, young, and nonsmokers. Barriers to recruitment included lack of telephones in a large proportion of households, conflicting beliefs about health/health care/research, fears, taboos, and occasional rumors about study examination procedures. Participants were referred for follow-up of health problems detected by the study. The strong commitment of the participating communities helped to insure the success of the SHS, which can be considered a model for recruitment in future American Indian population-based studies. Success was facilitated by the use of a variety of recruitment techniques.

Although inclusion of minorities in clinical and epidemiologic research is necessary for valid inferences about health and disease in all segments of the population, minorities are frequently under-represented

in research due to difficulties in recruitment and retention, leading to insufficient data for meaningful analysis in these subpopulations. The National Institutes of Health (NIH) requires that “clinical trials be designed and carried out in a manner to provide for valid analysis of whether the variables being studied in the trial affect women or members of minority groups, as the case may be, differently from other subjects in the trial” (NIH Revitalization Act, 1993). In addition, NIH policy encourages inclusion of minorities in epidemiologic research (Freedman, Simon, Foulkes, et al., 1995; Swanson & Ward, 1995).

In population-based studies, recruitment of participants can be one of the most challenging tasks. Recruitment goals depend on the makeup of the population of interest and the nature of the study (Johnson & Arfken, 1992). Researchers involved in studies of American Indian (AI) populations face the possibility of unique challenges in addition to the recruitment barriers that typically exist in other minority or general population-based studies. Most AI people take great pride in preserving their rich cultural heritage, some of which by its very nature cannot always be well understood by the general population or even by different AI groups. These cultural differences, which deserve great respect, influence their beliefs about their own health, health care, and research, in general. The same tribal elders who may take a somewhat fatalistic view of their own lives still may have a strong desire to contribute to the understanding of risk factors and diseases that may reduce the quality of or cut short the lives of future generations. Documented historical events may also affect the development of a spirit of cooperation in government-funded studies of the AI people. Added to these cultural differences, many times AI populations are more widely dispersed across rural areas, having no street addresses and no telephones, or, in the case of the younger community members, may be more mobile and thus more difficult to track than other minority or general populations.

The Strong Heart Study (SHS) is the first large, multicenter, population-based study of cardiovascular disease (CVD) and its risk factors in three geographically as well as somewhat culturally diverse AI populations. The study was undertaken because CVD has become the leading cause of death in AI people (U.S. Department of Health and Human Services, 1984) and because CVD mortality rates appear to vary among the various AI communities (Lee et al., 1990; Welty & Coulehan, 1993). The SHS uses standardized methodology to estimate CVD mortality and morbidity rates and to compare CVD risk factor levels among AI groups living in the three different geographic areas of the United States described below. In Phase I of the SHS, participants were invited to come to the local study site for an examination that included written informed consent, a personal interview, a physical examination, and the collection of blood for laboratory tests to estimate the prevalence of CVD and its potential risk factors. Details of the design, methods, and results of the study were published

previously (Howard et al., 1995; Lee et al., 1990; Lee et al., 1995; Welty et al., 1995).

Tribes and geographic areas included in the SHS are the Pima/Maricopa/Papago Indians of central Arizona (Gila River, Salt River, and Ak-Chin Indian communities), seven tribes in southwestern Oklahoma (Apache, Caddo, Comanche, Delaware, Fort Sill Apache, Kiowa, and Wichita), the Oglala Sioux Tribe (Pine Ridge) and the Cheyenne River Sioux Tribe (Eagle Butte) of South Dakota, and the Spirit Lake Tribe (Fort Totten) of North Dakota. These three field centers (Arizona, Oklahoma, and the Dakotas) represent, respectively, the expected low-, intermediate-, and high-risk areas for CVD. They also represent areas of wide variation in climate and living conditions. Many of the AI people live on reservations in Arizona (AZ) and the Dakotas (SD/ND), but there are no reservations in Oklahoma (OK). Due to these differences among centers, the three field centers developed somewhat different recruitment techniques.

Because the study of CVD is the main focus of the SHS and because of budget and time constraints, it was not feasible to collect the extensive data needed for a comparative study of the recruitment methods presented herein. To single out any one technique as best or worst would be difficult, because so many different techniques were used to encourage participation in the study. It is highly likely that each method appealed to different segments of the study population. It is also likely participants exposed to a combination of some or all of the recruitment techniques might not be able to pinpoint which one method was most influential in their decisions to participate.

The main objective of this paper is to describe the preliminary work conducted before Phase I examinations began and the wide range of recruitment techniques and strategies that were employed during Phase I of the study (June 1989-January 1992). This paper also presents a comparison of participants with a sample of nonparticipants, to examine the possibility of a biased sample due to the recruitment methods used in the SHS. The success of this combination of techniques is evidenced by the achievement of greater than 50% recruitment rates and reaching the goal of examining at least 4,500 participants over the 30-month examination period. During this time, genuine feelings of mutual respect and trust between SHS staff and the participating AI groups grew and, in the end, remained.

Methods

Prerecruitment Activities

The SHS was funded by the National Heart, Lung, and Blood Institute (NHLBI) as a cooperative agreement. Under this funding mechanism, NHLBI staff participated as collaborators in the conduct of the study. This role offered an opportunity for early coordination that is not available under most other study organizational structures.

Preaward Activities

In the initial Request for Applications, guidelines and requirements that were designed to enhance recruitment success were incorporated into the solicitation. Early discussions were held with representatives of the AI communities and the national AI organizations. This dialogue identified language and procedures associated with the study design that might be viewed as inappropriate by AI people as well as areas of potential misunderstanding within the AI community. The NHLBI Ad Hoc Committee on Minority Populations helped with this early planning. The committee includes AI as well as other minority groups to advise the NHLBI on minority issues. This group was helpful in supporting the study concept, as well as in formulating the plan for the study.

Early and continuing collaboration with the Indian Health Service (IHS) served to inform the agency of plans and to obtain IHS input on the possible impact of the proposed study upon existing programs, resources, and facilities, and to minimize the potential for interagency conflicts as the study progressed. The SHS found the IHS receptive to this early communication, and this resulted in their assistance in identifying existing resources that might be useful during the planning phase of the study. As an example, the IHS database was used to generate statistics on the health problems of specific IHS areas and service units. The regional IHS offices were also helpful in providing access to local IHS facilities and resources at each of the three study centers. Access included accommodations for reviewing medical records of participants (with written permission from participants) and sharing IHS hospital/clinic space, equipment, and occasionally their personnel.

Finally, steps were built into the NHLBI solicitation process to ensure that the Principal Investigators (PIs) and their proposed study communities would be comfortable with each other, have a commitment to the interests of the other study centers, and have respect for the concerns of the specific AI communities. This was addressed by two approaches. First, evaluation of proposals included evidence of previous acceptable participation rates and experience of staff members in working with the AI communities.

This was generally assessed by the inclusion of resolutions of support approved by the tribal governments as well as letters of support from key individuals from the involved communities. It was clearly helpful that the SHS PIs had long-standing relationships with the AI communities prior to the solicitation. Second, prior to the awards, NHLBI staff made site visits to each potential center to evaluate the spirit of cooperation that existed among the study personnel and key individuals from the communities. It was clear that chances of success would be enhanced by a strong commitment of the leadership, members of the AI communities, and the PIs and study staff members to each other and to the study.

Preexamination Activities

After funds were awarded, a second series of activities was essential for successful recruitment efforts. Foremost among these was a concerted effort to obtain community involvement in the planning of the study. SHS PIs and staff held open community meetings, as well as meetings with tribal leaders, as the protocol was being developed to describe plans and to obtain feedback from the communities. The input of community members was vital in the design of the study questionnaires. Tribal representatives collaborated with the scientists in writing sensitive and appropriate questions suitable for their communities. Special consideration was given to questions regarding income and alcohol use. For example, rather than asking participants for a dollar amount of annual household income, it was decided that it would be less offensive to ask if they received enough income to pay their bills. Further, it was the opinion of some of the representatives that, because of their culture, tribal members might not understand or might be offended by some of the phraseology and/or terminology used in standardized questionnaires designed to measure psychosocial variables such as depression, stress, and social support in the general population. For example, simple terminology such as the word "stress" and the phrases "feeling on top of things" and "feeling blue" did not translate well among some Native-speaking tribal elders. Another area where the assistance of tribal representatives was particularly valuable was in writing questions to measure American Indian traditionality. What constitutes being traditional varies by tribe/community. One might assume that tribal members who frequently attend powwows must be more traditional; however, not all tribes and communities hold powwows. Furthermore, some tribes and communities that do hold powwows do not consider them as being traditional. Additionally, the tribal representatives suggested areas of interest that would be useful for health care planning in their communities. As more and more tribes become less dependent on the Indian Health Service for their health care planning, results of studies such as the Strong Heart Study can provide them with information to assist them in allocating their health monies. Tribal clinic administrators were interested in developing clinic education programs designed for disease

risk factor reduction to prevent future disease among tribal members and in information that would assist in short- and long-term planning related to patient care for health problems already existing. The protocol was pilot tested in the communities, so that modifications could be made to any troublesome areas before the examinations began.

In addition to involving the communities in the study protocol development, much time and attention were devoted to producing a poster and logos to promote the study. The SHS hired local AI artists to design a poster and logo that would be appealing and acceptable to all 13 of the participating tribes. An OK AI artist designed the SHS logo (see Figure 1). At the center of the logo is the traditional valentine heart, which is more universally recognized than the anatomically correct heart, with the state maps of the three participating areas superimposed on top of the heart in an arrangement similar to their respective positions on a United States map. Immediately surrounding the heart and maps are the names of the 13 participating tribes and communities, listed in alphabetical order in a circle, without preference to any single tribe or community. The design is completed with the name of the study, "Strong Heart Study," in another circle, outside the circle of tribal names. Representatives of the participating tribes suggested this name, because the study is about cardiovascular disease and all tribes could relate to the desire for maintaining a strong heart. The circle is a meaningful symbol in several areas in the lives of AI people. For example, it represents the shape of the earth and the sun; many ceremonies at powwows are held in circles; early AI calendars were round; it symbolizes the cycle of life, everything begins and everything comes back; it suggests no end.

A Lakota college student did the artwork for the poster. It is a traditional medicine wheel, again circular, divided into four different-colored sections, which represent the four seasons and the four directions. Superimposed on the wheel are the American bald eagle and a buffalo skull on either side of a traditionally dressed AI man holding a ceremonial pipe. The American bald eagle played a major part in the story of creation for some AIs, and the buffalo is a sacred animal that was the main source of food, clothing, and shelter for early AI people. Four eagle feathers hang from the bottom of the medicine wheel. At the bottom of the poster is the wording, "The Strong Heart Study—A study of cardiovascular disease in American Indians supported by the National Heart, Lung, and Blood Institute and the Indian Health Service." Tribal representatives approved the logo and poster designs as having symbolism that would be accepted and respected by and hold some meaning for all 13 of the participating tribes and communities.

A brochure was developed to explain the purpose of the study, the tests and procedures included in the study, why the study would be beneficial to the participants and to the communities, and a point of contact (individualized by center) for further information or to schedule an

Figure 1
Strong Heart Study Logo



appointment. The brochure also included a letter from Everett Rhoades, M.D., then Director of the IHS, encouraging tribal members to participate for their own benefit as well as for the benefit of the communities. This brochure was given to all potential participants, as well as to all participating tribes, tribal leaders, and recruiters, to publicize the study.

Recruitment Activities

Because the SHS is the first large-scale, multi-center, minority population study of its kind, there was limited published information available about successful recruiting methods for such a study, much less for a study in such a geographically and somewhat culturally diverse AI population as in the SHS. This diversity dictated that each of the three

SHS examination centers be flexible and make changes and adjustments when necessary to develop an overall recruitment package that worked well in their particular situation. However, all three centers used some combination of the same basic methods discussed below.

Identification of Eligible Population

All members of the 13 participating tribes aged 45-74 years who resided in their communities were eligible for participation. Most of the prospective participants were identified by name and their eligibility was determined through information contained in tribal rolls supplied by the local Bureau of Indian Affairs and tribal offices. Other methods for finding eligible prospective participants included advertising the study through the media, attending community gatherings such as powwows, local health fairs, and periodic community meetings.

Personal Contact

Early in the study, both the AZ and the SD/ND centers hired local recruiters/drivers. They made home visits to invite eligible people to the examination and to provide transportation to the clinic when necessary. If potential participants were not at home, SHS information was left for them on a door hanger printed with "SORRY I MISSED YOU." In OK, SHS staff, particularly Tribal Liaisons, contacted eligible people, either by telephone or in person; and a full-time recruiter was not required until over a year after examinations began.

Every effort was made to enlist recruiters from each participating tribe or community included in the study. In remote areas where there were no street addresses and no telephones, the centers selected recruiters with a thorough knowledge of community geography and personal acquaintance with the prospective participants. The study also enlisted community members who were active in community and tribal activities (e.g., powwows and lunch programs for the elders) to help with recruitment. In some of the communities, bilingual recruiters were helpful.

In addition to the full-time SHS recruiters, many community members volunteered to help with recruitment without compensation. For example, Tribal Administration staff, Community Health Representatives (CHRs), Senior Center staff, clinic staff, and community health nurses, as well as participants who had completed their examinations, also helped to promote the study among eligible community members. The CHRs were particularly helpful by informing the PIs of potential problems in the community that might affect the SHS.

Recruiters were well informed concerning the eligibility criteria and had a thorough knowledge of the study protocol, in order to give accurate answers to questions that arose from prospective participants. When the recruiter did not have previous experience with medical studies, a study nurse or other staff member with a medical background and/or a thorough

knowledge of the study protocol accompanied the recruiter. After initial recruitment efforts, it was especially helpful when the recruiters had participated in the study and could then provide first-hand information regarding the examination.

Recruiters were flexible with their time, frequently making multiple weekday and/or weekend and holiday contacts, thus maximizing their chances for finding prospective participants.

Mass Mailings

As additional potential participants were identified and home address databases were developed, mass mailings of invitation letters were utilized. Mailings were initiated early in the study in SD/ND, where potential participants lived as much as a ten-hour drive away from the central research office, and in OK, a more urbanized area without reservations. In the last year of the examinations, the AZ center sent a letter to all remaining eligible people, mainly those with known addresses who lived off the reservation.

In OK, initial mailings were targeted at the people who were currently eligible but would become ineligible because of age before the end of the examination period. Included with the letter of invitation were the four-page brochure (described above), a postage-paid card to be returned to the study offices, and/or toll-free telephone numbers to be called if the prospective participant was interested in participating in the study. During the ongoing process of building and updating the databases, about 1500, 2500, and 4000 invitations, respectively, were mailed by the AZ, OK, and SD/ND study centers.

Media Recruitment

Local radio broadcasting and print media were also used to promote the SHS. Radio spots were either purchased or were broadcast as public service announcements by local radio stations, for SHS advertisements. During some AI radio programs, interviews with the PIs about the SHS, some in the native languages, were broadcast in the study areas. Articles that described the SHS and solicited participation were published in tribal newsletters and area newspapers.

Community Visibility and Involvement

The three SHS centers co-hosted benefit powwows to help raise funds for local health-related programs and set up booths at community health fairs and other community activities. These gatherings were all well attended by prospective participants and offered free health education material and health checks such as blood pressure readings and random glucose testing, drawings for small prizes, and souvenirs that promoted the study. For example, water bottles stamped with the SHS logo and cardboard fans printed with "I'M A STRONG HEART STUDY FAN" were

particularly welcomed in the August heat of OK at the annual American Indian Exposition.

At all three study centers, input and formal approval from each participating tribe were obtained at all stages of the study. Tribal members were invited to periodic community meetings, where PIs delivered presentations on the progress and results of the study, heard feedback from community members, and answered questions from attendees. Additional community meetings were held when PIs from other centers were visiting, either for the quality control visits or for Steering Committee meetings, which were rotated among the field centers. These meetings also provided the opportunity for SHS staff to schedule appointments for the examinations.

As mentioned above, part of the intensive efforts to promote participation of the AI communities in the study was to hire qualified community members for staff positions. In Phase I of the SHS, 66 persons were employed, 38 of whom were AI. In addition, a program for AI students was begun to provide experience in research and to expose young people to career opportunities in medicine and research. This approach reflected the desire of the PIs to increase the number of trained AI investigators available to conduct future studies and to improve health care. The SHS utilized a total of 78 health professions students (38 AI) to help with the study during Phase I.

Examination Activities

Compensation and Promotional Materials

The SHS gave participants a small amount of money to compensate them for their time and travel and gave them T-shirts and other useful items (water bottles, mugs, and tote bags), all printed with the SHS logo, to show the appreciation of the staff. These promotional items were well received by participants and also served to increase the visibility of the study within the community. Because the study protocol required participants to be fasting when they came in for the examination, a healthy morning snack or a small lunch was provided after the blood samples had been drawn.

For the convenience of participants who could not participate in the study on a weekday, all three SHS centers scheduled weekend examinations. One center was able to obtain some data for parts of the examination that did not require fasting status during evening examinations, while still observing protocol timing requirements for collecting all data on an individual participant.

Examination Results and Follow Up

The study protocol emphasized patient involvement and education, beginning with the informed consent process before the examination began. The participants read the consent form or it was read to them, if necessary. The participant was fully informed about all aspects of the examination and encouraged to ask questions. After the participant gave his/her approval by signing the consent form, the examination began. The participant received a copy of the informed consent, educational brochures regarding a healthy heart lifestyle, and information about the importance of risk factor reduction and lifestyle changes to decrease his/her risk for cardiovascular and other chronic diseases. The SD/ND center gave each participant a personalized, AI-specific health risk appraisal that provided specific advice on how to improve his/her health through risk factor modification (Welty, 1988; Welty, 1989). The SD/ND center also offered cancer screening for breast, cervical, and colorectal cancer through support provided by the National Cancer Institute (Welty, Zephier, Schweigman, Blake, & Leonardson, 1993).

Referrals and follow-up for adverse health findings were also emphasized throughout the SHS examination period. The study protocol outlined specific guidelines to be followed by SHS personnel for emergency referral for any life-threatening illness and immediate, urgent, and routine referral for non-life-threatening adverse findings. A summary of the examination, along with an explanation of test results and suggestions for follow-up, was mailed to each participant. The summary and any other diagnostic information obtained through the SHS were also sent to personal physicians and/or medical facility, upon request of the participant. In addition, a SHS newsletter describing progress of the study and preliminary results was composed, printed, and sent out to all participants, tribal leaders, and health care providers twice a year.

Comparison of Eligible Participants and Nonparticipants

Due to the large sample sizes sought in the SHS (1,500 participants per center in the eligible age range), it was clear from the outset that our samples *de facto* would be representative of the underlying populations. However, the possibility remained that nonparticipants might differ substantially from our sample groups due to any number of reasons. To assess whether nonparticipants deviated in any major way, each field center generated lists of at least 100 eligible nonparticipants using a random number selection process. A nonparticipant interview form was administered to these people by trained interviewers to gather information about their medical histories and some major CVD risk factors. Because all information obtained from nonparticipants was self-reported, only information from the participant medical history, which was administered by the examiner and did not include any test results, was used for comparison purposes. The exceptions were height and weight, which were self-reported in nonparticipants and measured in participants.

Results

The goal of obtaining at least 1,500 eligible participants per geographic area was met at all three SHS centers; AZ examined 1,545, OK examined 1,549, and SD/ND examined 1,557. Later, during the data cleanup stage, 102 persons were found to be ineligible because of their age, tribe, or having been examined twice (duplicate examinations were discarded), which left AZ with 1,500, OK with 1,527, and SD/ND with 1,522 eligible participants for data analysis.

Participation rates were calculated for all three centers. The numerator was the number of eligible participants examined between June 1, 1989 and January 31, 1992. The denominator included all eligible people in the SHS communities during this period of time. People who were eligible for the study but died before the examination period ended were included in the denominator. However, those who could not be located and those who moved out of the study area during the Phase 1 examination period were excluded. Existing tribal rolls required extensive cleanup before denominators could be determined. In all three centers, enrollment rates were above 50%, were higher for females than for males, and were highest in the youngest age group (Table 1). Availability of telephones in the households of participants varied by center, with 43%, 72%, and 52%, for AZ, OK and SD/ND, respectively.

Table 1
Participation Rates (percent) by Age, Center, and Gender

Age Group	AZ				OK				SD/ND			
	M		F		M		F		M		F	
	%	N	%	N	%	N	%	N	%	N	%	N
45-54	77.7	(314)	90.6	(481)	61.3	(309)	64.9	(360)	52.2	(325)	61.0	(413)
55-64	62.8	(159)	76.8	(315)	56.7	(203)	68.4	(333)	52.7	(225)	60.5	(288)
65-74	38.4	(73)	52.2	(158)	53.5	(131)	57.0	(191)	43.5	(108)	53.8	(163)
All	64.5	(546)	76.8	(954)	58.1	(643)	64.2	(884)	50.7	(658)	59.3	(864)
All	71.8(1500)				61.5(1527)				55.3(1522)			

A comparison by center of participants and nonparticipants on selected variables is shown in Table 2. Participants were slightly younger than nonparticipants; however, the difference was significant only for females in OK ($p < 0.001$). One major difference between participants and nonparticipants was the gender distribution ($p < 0.0001$), reflecting the higher participation rate among women. After adjustment for age, the gender-specific rates of self-reported diabetes were similar for both participants and nonparticipants in all three study centers. There were significant differences between participants and nonparticipants with respect to self-reported hypertension for both genders in AZ and for females in SD/ND; the gender-specific rates for hypertension in OK were not significantly different. Participants were likely to be nonsmokers in all three centers; however, the only significant difference from nonparticipants was among SD/ND males (less among participants). The significant differences in body mass index (BMI), which is a widely used indicator of obesity and is defined as weight in kilograms divided by height in meters squared, for females in AZ and for both genders in SD/ND were the result of the tendency of nonparticipants to report themselves to be lighter and taller than participants. Significant differences were found for both height (shorter participants) and weight (heavier participants) among AZ females but only for height (shorter participants) among males in AZ, and for weight (heavier participants) among males in SD/ND.

Discussion

Without the experience of any previous studies similar to the SHS and a lack of publications about unsuccessful ones, the SHS charted its own course with careful planning and community involvement during the prerecruitment activities. Publicity that resulted from community involvement in the prerecruitment activities (described above) helped to fill the examination slots at the beginning of the study. Some participants examined during the early stages of the study were eligible local community leaders and/or friends and relatives of the SHS staff. Several of the staff were recruited from the participating communities. As more people were examined and voiced positive comments about the study to others, interest among other eligible people increased. However, it quickly became obvious that, in order to reach recruitment goals, the SHS could not afford to rely on any single recruitment method but would have to incorporate a combination of methods and techniques to reach all segments of such a diverse group of potential participants.

Throughout Phase I of the study, the SHS staff closely monitored participation levels by comparing observed levels of participation with the levels needed over a certain time period, e.g., weekly or monthly, in order to meet the goal of at least 1,500 participants at each of the three field centers over the time period for which Phase I was funded. Whenever

Table 2
Comparison of Participants and Nonparticipants

	AZ		OK		SD/ND		TOTAL	
	Part.	Nonpart.	Part.	Nonpart.	Part.	Nonpart.	Part.	Nonpart.
N	1500	100	1527	100	1522	111	4549	311
GENDER (%)								
Female	64 ¹	38	58	57	57 ¹	42	59 ¹	46
MEAN AGE (yr)								
Female	56	57	57 ¹	61	57	57	57 ¹	59
Male	55	57	56	59	56	57	56 ¹	58
CURRENT SMOKER (%)								
Female	13	16	31	20	45	55	29	30
Male	30	34	37	37	53 ²	69	40 ²	48
HYPERTENSIVE (%)								
Female	56 ²	29	38	44	30 ²	15	42 ²	30
Male	59 ²	44	38	26	32	22	42 ²	31
DIABETIC (%)								
Female	64	61	32	33	33	26	44	38
Male	58	48	29	42	23	27	35	38
MEAN HEIGHT (cm)								
Female	158 ²	160	160	161	161	163	160 ²	161
Male	171 ²	175	174	174	175	176	173 ²	175
MEAN WEIGHT (kg)								
Female	83 ²	75	80	78	78	74	80 ²	76
Male	91	88	92	89	88 ²	82	90	86
MEAN BMI (kg/m²)								
Female	33 ²	29	31	30	30 ²	28	32 ²	29
Male	31	29	30	29	28 ²	26	30 ²	28

¹ $p < 0.05$, comparing participants and nonparticipants

² $p < 0.05$, comparing participants and nonparticipants, adjusting for age

participation levels began to drop, possible reasons were examined, using feedback from participants and potential participants to adjust recruiting strategies or to make adjustments in the examination routine, within the guidelines of the protocol.

The examination required 2 to 4 hours to complete. Work schedules and community activities such as powwows, fairs, funerals, and holiday celebrations made scheduling difficult. Weather conditions, including extreme heat in Arizona, harsh winter weather in South and North Dakota, and rainy seasons also hampered the recruitment effort. These factors

were addressed through repeated participant contacts, rescheduling of appointments, evening and/or weekend clinics, and extending the recruitment period. In all cases, community members worked effectively with the investigators in solving these problems.

When looking at mass mailing as a recruitment method, one should take into consideration the source of mailing addresses and the method of mailing (bulk rate or first class). In the experiences of the SHS in some locations, where mass mailing was used early in the study, the address lists obtained from tribal and Bureau of Indian Affairs records were not up-to-date. Bulk mailing at the lowest cost does not allow return service. Even if first-class mail is used, forwarding orders do not stay in effect long enough to be useful. In areas where people have telephones, many times their numbers are unlisted, thus eliminating the use of recruiting by telephone and of a local telephone directory to obtain current addresses.

Because of these problems with the use of telephone numbers and addresses for recruiting, the SHS relied heavily on personal contact by local community members and recruiters who were better able to locate potential participants. Personal contact worked well for the SHS; however, some recruiters exhausted their contacts within the community before the recruitment quota was met. Additional recruiters with different ties to the community were then utilized.

Potential participants were contacted multiple times by different methods, unless they asked not to be contacted, and were not considered as nonparticipants until the examination phase was complete. Some participants who initially refused to participate changed their minds as the study progressed. Many prospective participants missed multiple appointments before finally completing the examination. In the SD/ND center toward the end of the Phase I examination period, eligible participants who had failed to keep previous appointments were asked to sign a form indicating that they did not wish to participate in the SHS. Often, they would not sign such a form but rather would keep the next appointment that was made for them.

In addition to the impediments encountered in the recruitment effort that resulted from the conflicting beliefs about health/health care/research referred to earlier, some potentially harmful rumors developed. During the early stages of the SHS, a rumor surfaced about the motives of another unrelated and unsuccessful study of a tuberculosis vaccine being tested in one of the study communities. Other types of rumors that had to be addressed were, for example, the possible use of DNA from the blood specimens that were drawn in an attempt to either prove or disprove an individual's degree of Indian blood or if they had committed a crime. Additionally, because of AI culture, there was some concern that the blood specimens would be held in perpetuity, long after a participant had died, not allowing the soul to rest, or that they might be used in an attempt to create new life. Other problems resulted from the usual complaints one

might expect to hear related to pain or bruising that can accompany any blood-drawing procedure but when discussed in the community may be blown out of proportion. These problems were overcome by many means including hiring staff from the community, maintaining an ongoing dialogue with CHRs, tribal leaders, and medical staff, and conducting periodic meetings in the various communities for the Strong Heart Study PIs and staff to talk to tribal members and leaders.

The SHS participants clearly were representative of the underlying communities, since they comprised greater than 50% of the eligible populations in each of the three centers. In addition, it appears that nonparticipants were not markedly different from the participants. Although some statistically significant differences were found between the small random samples of nonparticipants in comparison to the corresponding participant groups, these differences were generally small and sporadic. None of the differences in any of the tested variables held true for all three centers, and only occasionally for both genders within a center.

Perhaps the most notable differences were in weight and self-reported hypertension. Since weight was a measured variable in the participants but a reported variable in the nonparticipants, it is not surprising that self-reported weights were lower in the nonparticipants than carefully documented weights gathered for the participants. With respect to hypertension, it is possible that actual prevalence may be the same in both participants and nonparticipants. It is conceivable that the participants were more conscious of their health status or that nonparticipants were more likely to deny health problems, particularly when their reports would not be verified through actual measurements. In any case, the differences found between participants and nonparticipants, as detailed in Table 2, are small in size, sporadic in nature, and possibly more reflective of the inaccuracies of self-reported data than of real differences. Thus, we are confident in concluding that the SHS cohorts are quite representative of the 13 participating tribes and three geographic areas.

The Strong Heart Study achieved its recruitment goals at each center by working closely with the participating communities at all levels and by demonstrating a clear commitment to benefit the individual, communities, and future generations of the participating American Indian communities. These goals were (or will be) achieved by referring participants with health problems for care, committing to share study results and data, keeping the participants informed of study findings through Strong Heart Study newsletters, and training young people in epidemiologic research. Through these study activities, the communities also became committed to the success of the study. Because of the large number of American Indian employees and students affiliated with the study, American Indian communities will be better able to conduct health research in the future.

Sensitivity to the needs of the communities, respect for cultural differences, and flexibility to meet variable conditions are essential to successful recruiting within the American Indian community. The lessons of the Strong Heart Study experience should be readily applicable to other studies of American Indian populations.

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PRENATAL ALCOHOL USE AMONG URBAN AMERICAN INDIAN/ALASKA NATIVE WOMEN

Lori L. Westphal, M.A., M.P.H.

Abstract: This paper examines prenatal drinking among American Indian/Alaska Native women using the 1988 Urban Indian Oversample for the National Maternal and Infant Health Survey. Using univariate, bivariate, and multivariate analyses, alcohol consumption during pregnancy was examined by demographic and behavioral variables. Although one out of every five American Indian/Alaska Native women consumed some amount of alcohol during pregnancy, those who used alcohol drank less than one drink per month.

Prenatal alcohol use, particularly moderate to heavy alcohol use, defined as six or more drinks per week, is associated with adverse structural, behavioral, and cognitive deficits in children exposed in utero (Waterson & Murray-Lyon, 1990). The amount and timing of alcohol exposure during pregnancy can have a wide ranging impact upon the fetus' neurological and physiological development (Day, 1992). The most severe result of prenatal alcohol consumption is fetal alcohol syndrome (FAS), a condition distinguished by growth retardation, central nervous system impairments, and facial dysmorphia (Aase, 1994). FAS is believed to be the most common preventable cause of mental retardation in the United States (Able & Hanningan, 1995).

Because no lower limit has been established for safely consuming alcohol while pregnant, recommendations of no alcohol consumption during pregnancy have been advocated by health care providers and public health agencies (Morbidity and Mortality Weekly Report, 1995). Investigations into the teratogenic effects associated with FAS have implicated relatively high levels of alcohol consumption in the production of observable adverse effects (Jacobson & Jacobson, 1994). However, the effect of lighter alcohol consumption on fetal development continues to be of relevance since the relationship between lower levels of alcohol use and more subtle alcohol-

related birth defects (ARBD) have yet to be determined definitively (Faden, Graubard, & Dufour, 1997). When identified early, interventions that target the cessation of alcohol consumption early in pregnancy can prevent further damage and provide time for fetal catch-up growth (Serdula, Williamson, Kendrick, Anda, & Byers, 1991).

American Indians and Alaska Natives (AI/ANs) reportedly have a higher risk for FAS relative to other racial and ethnic groups; however, estimates of FAS among AI/ANs vary widely by tribal group and geographical location (Burd & Moffatt, 1994; *Morbidity and Mortality Weekly Report*, 1988). The use of International Classification of Diseases, Version 9 (ICD-9) coding to ascertain cases of FAS produced a prevalence rate of 2.1 per 1,000 live births among American Indians living in the Aberdeen area during 1981-1992, which approximates the rate found among Alaska Natives during 1978-1991—2.1 per 1,000 live births (*Morbidity and Mortality Weekly Report*, 1993; *Morbidity and Mortality Weekly Report*, 1995). Within the southwestern United States alone, prevalence estimates per 1,000 live births ranged from 1.4 among the Navajo to 9.8 among the American Indians in the Southwest plains during 1980-1982 (May, Hymbaugh, & Aase, 1983). Capturing the true prevalence rate of FAS among AI/ANs has proven difficult to ascertain because of the wide variation in the diagnostic criteria used to ascertain cases (Burd & Moffat, 1994; Egeland, Perham-Hester, & Hook, 1995).

Given that estimate rate of FAS appears to be higher among AI/ANs at least in certain instances, further attention needs to be drawn to the extent and characteristics of AI/AN women's alcohol consumption during pregnancy. Little information is available using national, population-based studies in general, particularly among urban AI/ANs. This paper describes the prenatal consumption of alcohol among a subgroup of urban AI/AN women by available demographic and behavioral characteristics.

Methods

The sample used in this study is the Urban Indian Oversample conducted as part of the 1988 National Maternal and Infant Health Survey (NMIHS) (U.S. Department of Health and Human Services, 1991). Reports from the 1990 U.S. Census indicate that nearly two-thirds of AI/ANs live outside identified tribally owned lands or reservations (U.S. Bureau of the Census, 1994). To provide more detailed information than previously available for urban AI/ANs, these women were oversampled using the same survey methods for the general NMIHS as described elsewhere (Sugarman, Brennehan, LaRoque, Warren, & Goldberg, 1994). Birth certificates were used to identify all AI/AN women who delivered a live-born infant during the calendar year of 1988 and lived off reservation in the catchment areas of selected urban American Indian clinics in 21 states. A random sample of these AI/AN women were mailed questionnaires for inclusion in the

oversample (personal communication, Johnathan Sugarman, 1996). Of 1,254 possible respondents, 763 completed questionnaires for a response rate of 60.8% (Sugarman et al., 1994). To date, the NMIHS oversample is one of the few available large-scale, population-based studies characterizing the health of urban AI/ANs, and has not been repeated with the subsequent administration of the NMIHS.

All respondents were asked if they consumed any alcoholic beverages during the twelve months preceding their delivery. Those who answered yes were then asked to recall the weekly or monthly average number of drinks they consumed after they learned they were pregnant, and whether or not they reduced their alcohol consumption during their pregnancy. The choice of explanatory variables was guided by similar research from national surveys on the socio-demographic determinants of drinking while pregnant, but clearly limited by the variables contained in the urban American Indian oversample of the NMIHS. Several of these variables have been found to be significant in predicting whether or not women drink alcohol knowing they are pregnant, including cigarette smoking, older age, unmarried, higher income, and higher education (Ebrahim et al., 1998; Morbidity and Mortality Weekly Report, 1995; Serdula, et al., 1991). In this paper, the prevalence of AI/AN women's drinking during pregnancy was analyzed by demographic and behavioral variables including maternal age, education, total household income, parity, cigarette consumption, time of pregnancy recognition, and prenatal care.

Because only 10 out of 763 women reported drinking heavily (six or more drinks per week) after they knew they were pregnant, separate analyses of the heavy drinkers could not be developed due to the small sample size. For example, polytomous logistic regression was attempted in which the dependent variable was categorized as no, little to moderate, and frequent drinking, but the model proved to be an inadequate fit based on the Pearson chi-square statistic. Consequently, the drinking variable was dichotomized in the logistic regression analysis in order to compare any or no drinking after learning of the pregnancy. Multivariate logistic modeling was used to compute odds ratios for each characteristic after controlling for all other characteristics. All independent variables were treated as categorical variables using dummy variable coding in a single model.

To examine further the effects of risk factors on only those who reported drinking during pregnancy, a multiple linear regression model was used to assess the relationship between each of the demographic and behavioral variables and alcohol consumption. The dependent variable consisted of continuous scores used to approximate the number of drinks per month or per week: (a) less than one drink per month, (b) two to three drinks a month, (c) one drink a week, (d) two drinks a week, (e) three to five drinks a week, (f) six to eight drinks a week, (g) 9 to 13 drinks a week, (h) 14 to 20 drinks a week, and (i) 21 or more drinks per week.

Sample data were not weighted for purposes of this analysis. Previous researchers attempted three different weighting strategies using the urban American Indian oversample and concluded that weighting the data did not alter the results derived from the unweighted data (Sugarman et al., 1994). All statistical analyses were performed using SAS 6.12 software (SAS Institute Inc., Cary, NC).

Results

Approximately 47% of the urban American Indian oversample reported drinking some amount of alcohol in the twelve months prior to their delivery; however, nearly 90% of those who reported drinking reduced their drinking after they realized they were pregnant. Overall, 22% of urban AI/AN respondents who had a live birth in 1988 reported consuming alcoholic beverages¹ after they learned of their pregnancies as shown in Table 1. Of those women who reported drinking while pregnant, 6% drank six or more drinks per week, 22% drank one to five drinks per week, 28% drank one to three drinks per month, and 44% drank less than one drink per month. Only four respondents reported drinking at the highest alcohol consumption level, 21 or more drinks per week. The median level of alcohol consumption among those who reported any drinking during their pregnancies was one drink per month.

The data in Table 2 show that the prevalence of prenatal alcohol use did not vary markedly by maternal age. Women with 16 or more years of education were more than twice as likely to consume some amount of alcohol after they knew they were pregnant as women with 12 years of education were. Similarly, women with total household incomes of \$40,000 or more per year were nearly twice as likely to drink during pregnancy as women with household incomes of \$10,000 or less per year were. The prevalence of drinking during pregnancy did not vary appreciably by parity or birth order. Among all AI/AN respondents, 34% reported smoking cigarettes in the 12 months before they learned they were pregnant. Women who smoked during pregnancy were nearly three times as likely to report drinking than nonsmokers. More than 97% of all AI/AN women in this sample received some prenatal care; however, the prevalence of prenatal drinking did not differ significantly between those who did and did not receive prenatal care.

Multiple linear regression was conducted among only those who reported *any* level of alcohol use after they learned of their pregnancy. Table 3 presents the bivariate and adjusted multivariate regression coefficients for the subsample of AI/AN women who drank during pregnancy. Several significant bivariate relationships emerge. Alcohol consumption during pregnancy has a positive relationship with age, marital status, and cigarette smoking, but has a negative relationship with education and total household income. The relationships with marital status and cigarette

Table 1
 Number and Percent of Drinks Consumed by Urban AI/AN Women
 After They Knew They Were Pregnant

Average Number of Drinks	(n)	%
21 or more per week	4	0.5
14 to 20 per week	0	0.0
9 to 13 per week	3	0.4
6 to 8 per week	3	0.4
3 to 5 per week	13	1.7
2 per week	14	1.8
1 per week	10	1.3
2 or 3 per month	23	3.0
1 per month	24	3.1
<1 per month	75	9.8
None	594	77.8

smoking are particularly strong in the bivariate regression analysis, explaining 10% and 12% of the variance, respectively.

In the full ordinary least squares (OLS) model, marital status and cigarette smoking remain significant at the .05 level when controlling for all other variables in the model. The linear combination of all eight independent variables accounts for 18% of the variance in predicting alcohol consumption. This multivariate regression analysis indicates that women who are unmarried (divorced, separated, widowed, or never married) and who smoke cigarettes are more likely to consume alcohol during pregnancy. Moreover, income level, which inversely correlates with drinking and explains 7% of variance, loses significance in the full model. Further investigation into the loss of total household income's significance in the full model shows that when marital status enters the model, income effects no longer are direct. Thus, total household income appears to be an important variable regarding drinking during pregnancy, although any direct affect on alcohol consumption appears absorbed by marital status.

Discussion

The NMIHS is one of the few population-based studies of AI/AN women that contains information regarding health behaviors during pregnancy. The urban American Indian oversample queried women about the amount of alcohol they consumed *after they knew they were pregnant*. While 1 in 5 women reported some alcohol use after pregnancy recognition, less than one-third of those who reported drinking were consuming alcohol

Table 2
 Number and Percent of Urban American Indian Women Reporting Any Drinking During Pregnancy and Adjusted Odds Ratios and 95% Confidence Intervals by Selected Characteristics

Characteristic	Interviewed Women	Crude%	Adjusted Or	95%CI
AGE				
19 or younger	119	22.7	1.2	0.6 – 2.1
20 – 24	234	21.4	1.1	0.7 – 1.8
25 – 29	217	21.7	1.0	referent
30 – 34	136	23.5	0.9	0.6 – 1.6
35 or older	57	22.8	0.9	0.4 – 1.9
EDUCATION (years)				
0 – 11	222	21.2	1.1	0.7 – 1.7
12	289	19.0	1.0	referent
13 – 15	183	24.6	1.5	1.0 – 2.4
16*	69	31.9	2.2	1.1 – 4.1
HOUSEHOLD INCOME				
< \$10,000	276	20.3	1.0	referent
\$10,000 – \$24,999	257	20.6	1.2	0.7 – 1.8
\$25,000 – \$39,999	122	23.0	1.4	0.8 – 2.4
\$40,000 + *	108	29.6	1.9	1.1 – 3.5
MARITAL STATUS				
Married	407	20.9	1.0	referent
Unmarried	356	23.6	1.3	0.9 – 2.0
PARITY				
1	212	22.2	1.0	referent
2	117	26.5	1.4	0.8 – 2.5
3 or more	434	21.0	1.9	0.6 – 1.4
SMOKING STATUS				
0	577	17.9	1.0	referent
1 – 10/ day*	137	36.5	3.0	1.9 – 4.5
> 10/ day*	49	32.7	2.7	1.4 – 5.1
PRENATAL CARE				
Yes	744	22.0	1.0	referent
No	19	26.3	1.1	0.4 – 3.3
WEEKS PREGNANT AT RECOGNITION				
First Trimester	700	91.7	1.0	referent
Second Trimester	57	7.5	0.6	0.3 – 1.2
Third Trimester	6	0.8	1.4	0.2 – 13.7
Total	763	22.1		

*Indicates significance at .05 level

Table 3
 Unstandardized and Standardized Coefficients from the Regression
 of Alcohol Consumption on Social and Demographic Characteristics

Independent Variables	Bivariate Relationships <i>b</i>	R2	Model <i>b</i>
Age	.064* (.168)	.03	.012 (.032)
Education	-.175* (-.185)	.03	.009 (.010)
Income	-.113** (-.271)	.07	-.057 (-.138)
Marital Status ¹	1.36** (.312)	.10	.781* (.178)
Parity	-.006 (-.003)	.00	-.038 (-.022)
Cigarette Smoking	.094** (.340)	.12	.074** (.267)
Prenatal Care	.874 (.067)	.00	.551 (.043)
Weeks at Recognition	.024 (.054)	.00	-.011 (-.024)
Total R2		.18	

¹Married=1, divorced=2, separated=3, widowed=4, never married=5.

on a weekly basis. Only 6% were consuming levels of 6 or more drinks per week. Given the small sample size of drinkers, it was not possible to use multivariate statistics to compare risk factors for women who reported consuming any prenatal alcohol use versus those who reported consuming moderate to heavy amounts. AI/AN women in this study who reported drinking after they knew they were pregnant tended to be better educated, more affluent, or cigarette smokers relative to those who reported no drinking after they knew they were pregnant. Among the one-fifth of AI/AN women who reported any drinking, cigarette smoking and unmarried predicted alcohol use.

The proportion of all women who reported drinking during their pregnancies in the nationally representative sample of NMIHS (20.7%) was equivalent to the proportion in the urban American Indian oversample. However, within the national NMIHS, AI/AN women who drank six or more drinks per week had a higher proportion of heavy drinkers relative to their numbers in the population than other ethnic and racial groups (Faden, Graubard, & Dufour, 1997). With the exception of age and prenatal care,

the socio-demographic patterns observed in these data follow those observed in the general birth population of the NMIHS (Morbidity and Mortality Weekly Report, 1995). Similarly, the results from the 1985-1988 Behavioral Risk Factor Surveillance System (BRFSS) on trends in alcohol consumption showed that pregnant women who smoked cigarettes and who were unmarried consistently reported a higher prevalence of alcohol use throughout all four years (Serdula, et al., 1991). The median number of drinks consumed by pregnant women was 4.2 drinks per month in the 1985-1988 BRFSS compared to one drink per month in the urban American Indian oversample of NMIHS.

Overall, only a small percentage of urban AI/ANs drank six or more drinks per week, the level considered at the greatest risk for FAS. The majority of respondents who reported drinking after they knew they were pregnant drank at levels considered to be light (Jacobson & Jacobson, 1994). Only averages of drinking per week or per month were obtained from the respondents; consequently, whether or not the light to moderate drinkers were engaging in binge drinking cannot be ascertained from the data here. Furthermore, given the particularly high use of prenatal care among the sample, respondents may have possibly received appropriate education about substance use during pregnancy, which may in turn account for relatively low levels of alcohol use during pregnancy.

Cigarette smoking appears as the most consistently significant and persistent correlate of alcohol use across studies despite controlling for other covariates. It is also important to note that cigarette smoking and alcohol consumption are highly correlated with each other, but do not appear to have a causal relationship. In other words, some other unmeasured variable not captured by the questions in the NMIHS appears to be driving both alcohol and cigarette use simultaneously rather than one driving the other. Interventions designed to target the prevention of alcohol use during pregnancy need to address the issue of smoking as well.

The low response rate limits extrapolation of the results to the general population of urban AI/ANs. No information exists describing the non-respondents in the NMIHS oversample; thus, it is not known if the non-respondents in the oversample noticeably differ from the respondents. However, the data do provide some observations of an understudied population of women and suggests a need to apply further efforts to conducting population-based surveys of pregnant AI/AN women. Special attention will need to be paid to obtaining adequate response rates, which will increase the generalizability of findings. As observed with other self-reports of alcohol use during pregnancy, these findings may be subject to underreporting by respondents who may minimize the frequency of their alcohol consumption in light of the increasing awareness about alcohol use and pregnancy (Bull, Kvigne, Leonardson, Lacinda, & Welty, 1999). Because these data are now over ten years old, they may not reflect more recent shifts in the drinking patterns of urban AI/ANs while pregnant.

The manifestation of FAS is often described as only the “tip of the iceberg” because of the more prevalent, yet more subtle effects of alcohol exposure during pregnancy (May, 1995). Until effects of lower-level alcohol use are fully elucidated, any level of alcohol use during pregnancy remains unacceptable for a healthy pregnancy outcome. Thus, only complete abstinence from alcohol use during pregnancy will prevent any possibility of FAS or alcohol-related birth defects from occurring (May, 1995). Given that at least 20% of the respondents reported some level of alcohol use during pregnancy, these NMIHS data support the on-going need to screen pregnant women for substance use. Early pregnancy recognition and early prenatal care will increase the possibility of identifying, counseling, and referring pregnant women who drink. Moreover, if pregnant women cease consuming alcohol early in their pregnancies, alcohol damage to the fetus can be minimized.

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Footnote

¹A drink is 12 ounces of beer, 4 ounces of wine, or 1½ ounces of liquor.

BICULTURAL RESYNTHESIS: TAILORING AN EFFECTIVENESS TRIAL FOR A GROUP OF URBAN AMERICAN INDIAN WOMEN

Linda Napholz, R.N., Ph.D.

Abstract: The purpose of this qualitative study of a 6 week effectiveness trial was to describe among a group of urban American Indian women, the process of successful traditionalism in the form of bicultural resynthesis. Bicultural resynthesis represents a major current attempt on the part of the participants to integrate traditional and contemporary demands in a positive, culturally-consistent manner. The themes of shame and isolation, adapting to survive, deculturation, ethnic switching/renewal, and bicultural resynthesis are discussed. Further support is achieved for retraditionalization of American Indian women's roles as an effective means of achieving American Indian self-determination and as a potential way of helping women overcome problems.

Loss of cultural values and ties, as well as physical distance from traditional support centers has been associated with a number of mental health problems among American Indians. Research has shown that the risk of alcohol abuse is accentuated by such a loss (Frederick, 1973; May, 1982; Streissguth, LaDue, & Randels, 1988). For example, the termination/relocation movement of the 1950s and 1960s which further took away American Indian rights and land, was associated with an increase in alcoholism among Natives (Tyler, 1973; Wilkinson, 1987). These social and psychological changes have had an impact on coping and adaptive strategies which has created a great deal of stress and disruption in the American Indian culturally based life-style orientation (Cvetkovich, Baumgardner, & Trimble, 1984, p. 412). American Indians were removed, once again, from their homes, families, and way of life (O'Sullivan & Handel, 1988). LaDue (1994) emphasizes the importance of understanding the historical reality that has impacted and continues to impact on the mental health of American Indians. She points out that the so-called

“discovery” of America 500 years ago has left American Indian communities with the reality of the disintegration of their ways of life, the loss of elders who hold the knowledge of their traditional ways, their ceremonies, their languages, and spirituality. For example, loss of traditional gender roles occurred when the main social change among tribes shifted from matriarchal to patriarchal societies (Mihsuah, 1996). Today, many American Indians are working to regain and preserve their Native identity by reclaiming their Native cultural traditions, languages, and values (Swinomish Tribal Mental Health Project, 1989).

The many stressors faced by urban American Indian working women, may negatively impact their psychological well-being. For instance, traditional American Indian culture in general emphasizes a way of life that places great importance on kinship ties and family. This central focus on the family makes it more likely that urban American Indian women who are employed will experience bicultural stress. Urban American Indian women also tend to be isolated from a traditional framework that could provide social support to resolve conflicts (Welch, 1987). Because American Indian working women tend to be more isolated from such important social supports, it may be more difficult to maintain a strong American Indian identity. Even though more highly educated American Indian women may enjoy greater economic opportunity by acculturating to the majority culture, there is evidence that this way of life can also be a significant source of conflict and stress (LaFromboise, 1988; Spindler & Spindler, 1958), and is associated with psychological problems (Kemnitzer, 1973). It has been suggested that the resolution of role conflict and the easing of bicultural stress can be facilitated by supporting the individuals' strong sense of Indianism, while maintaining “the flexibility to adapt to the expectations of the larger social system” (French, 1987, p. 197).

Retraditionalization

A cultural therapy program devised by French (1987) for American Indians was incorporated into an existing drug and alcohol abuse program in the Qualla Boundary. Adult Cherokee female alcoholics, who taught one another their particular craft skills, found that other Cherokee—younger women and children—wanted to learn their traditional customs. French (1987) asserts that the process of transformation for the women to honored teachers resulted in a “tremendous therapeutic process” that “greatly enhanced their self-esteem, providing them with a positive reward for being Indian” (p.194). It was concluded that the positive self-image and psychological well-being of American Indians in general is tied to a positive American Indian identity that must be reinforced and supported by regular involvement in traditionally based rituals, customs, and spirituality. Maintaining some traditional customs and roles, however, does not

necessitate a return to all of the “old ways.” Many American Indian women, for example, have undertaken a retraditionalization of their former roles as caretakers and transmitters of cultural knowledge within the context of contemporary American Indian life (LaFromboise, Trimble, & Mohatt, 1990). “Contrary to standard feminist calls for revolutionary change, American Indian women insist on taking their traditional places as healers, legal specialists, and tribal governors. Their call is for a return to forms which, they insist, involve women and men in complementary, mutual roles” (Green, 1983, p. 14). American Indian women’s assertiveness does not arise from a feminist perspective, but is demonstrated through the pursuit of traditional beliefs and talents in an effort to ensure tribal survival. This is more of a reassertion of complementary American Indian women’s roles within a tribal setting (Mihesuah, 1996, p. 65). The structure of the cultural system remains intact, but the specific jobs have been updated and modernized in accordance with societal change. Green (1983) and Allen (1986) further suggest that a complete return to the traditional roles and customs would not be desirable to all American Indian women but that awareness and discussion in regard to the retraditionalization paradigm would facilitate more balanced, culturally appropriate research on American Indian women. Additionally, LaFromboise (1994) identified that American Indians are at different stages of acculturation. She says that “some retain a mostly traditional lifestyle, while others are almost completely Westernized. Some are caught between the two cultures and have difficulty traversing the two worlds; others are comfortable in both cultures” (p.36).

The purpose of the present study was to test the effectiveness of a six week intervention based on the survey results of Napholz (1995) which focused on American Indian working women, role conflict and psychological well-being, and intensive interviewing. Although the participants participated in both quantitative and qualitative aspects of the study, the latter is the focus here. The purpose of the retraditionalization part of the effectiveness trial was to identify, among a group of urban American Indian women, the process of successful traditionalism in the form of bicultural resynthesis.

Method

Participants

Approval was obtained from the University of Wisconsin-Milwaukee Institutional Review Board for the Protection of Human Subjects. A convenience sample of eight American Indian working women between the ages of 30-65 from the Milwaukee area participated in the intervention group sessions. The workplace was the setting selected by the participants for the intervention group.

Of the eight women that participated in the group intervention, four were Oneida, one was half Oneida, one was Oneida, Chippewa, and Menominee mixed, and the other two participants identified themselves as being of American Indian descent. These participants lived in the greater Milwaukee area. There are six different American Indian nations in Wisconsin on eleven locations. At least a fourth of the Wisconsin's 40,000 American Indians live in the greater Milwaukee area (Bauer, 1992). Two of the women were married and without children, one was widowed, and the others were single or divorced and had children. The average level of education achieved was 15 years. The majority of the women identified themselves as middle class.

Materials

The materials for the intervention consisted of six sessions, each averaging at least 90 minutes in length, a slide show, and handouts addressing the psychological well-being issues of American Indian working women (see Table 1). The six sessions were audio taped. The psychoeducational materials were both collected and designed by the author to address intervention issues such as culturally assigned gender roles, stress, self-esteem, coping, empowerment, and life satisfaction. All handouts were revised to be eighth grade or lower in reading level to allow for greater applicability in future trials. The reading level of the handouts was assessed using the Flesch-Kincaid reading difficulty index (Microsoft Corporation, 1993-94). The intervention manual is available by request from the author.

Measure

The aim of the qualitative data analysis of the retraditionalization component of the intervention, was to describe through oral tradition (Chavez & Oetting, 1995) the process of bicultural resynthesis as related to psychological well-being among the participants. The qualitative commentary generated from the intervention group was audio recorded and transcribed verbatim. The purpose of this type of phenomenological research approach was to focus on the meaning of the phenomena as described by the individual (Jasper, 1994). As such, phenomenology begins with a description and ends with an understanding of the meaning of the lived world of experience (Ray, 1994). Behaviors, associated key phrases, as well as significant nonverbal observations were typed in field notes after each session by the investigator and research assistant independently. Intervention group data were managed utilizing a computer program Ethnograph to facilitate coding and retrieval of qualitative data that had been transcribed using Microsoft Word 6.0 word-processing program. The

Table 1
Six Week Intervention

Intervention Topic by Week	Format	Handouts, Self-assessment Inventories, and Homework
Week 1 Who am I?	Slide presentation: Well-Being Among American Indian Women. Lecture: Who Am I? What Are My Goals? Discussion: What does stress mean?	-Stress Awareness Checklist -Life Events Stress Checklist -Who Am I Inventory -Signs of Discontent Checklist -Why are you Stuck Checklist -Stress Management Handout -Self-Care Techniques Handout -Getting Back to My Real Self Handout -Goal Development Handout
Week 2 Who am I as an American Indian working woman?	Lecture: Stress Related to Acculturation, Oppression, and Discrimination on Well-Being. Antiguilt Exercise	Were You Encouraged or Criticized Inventory Guilt and Regrets Inventory Managing Guilt Handout Depression Handout -Signs and Symptoms of Depression Handout -Twisted Thinking Handout
Week 3 What are the costs of multiple roles?	Lecture: Relationship Between Multiple Roles on Physical and Mental Health.	What Do You Value Inventory
Week 4 Making a choice to do something different.	Lecture: Role Conflict Management, Assertive Behavior, and Your Opinion Counts.	Anger Checklist -Blocks to expressing anger Handout -Ways to manage anger Handout How to say "no" Handout Self-assertion Handout How to Fight Fair Handout Letting Go Handout Homework: Ways You Feel Good About Yourself Inventory

Table Continues

Table 1 (Continued)
Six Week Intervention

Intervention Topic by Week	Format	Handouts, Self-assessment Inventories, and Homework
Week 5 Making it work.	Lecture: The Coping Process Coping Strategies and Elimination of Ineffective Coping Patterns. Coping and Empowerment	Coping Self-Assessment Exercise Reality Check Inventory Self-Esteem Checklist Self-Esteem Handout The Coping Process Handout What to Do to Cope With it All Sources of Support Handout Homework: Unfinished Business Inventory
Week 6 Continuing to make it work.	Lecture: Self-empowerment and Affirmations. Developing Goals Certification of Completion Closure	Are you Afraid of Success Inventory Forgiveness Feeling Good About Oneself Loving yourself Affirmations Guide to Self-Empowerment-Handout Goals

data were coded into certain pre-determined themes derived from a previous study (Napholz, 1995). From the exploration of the group's thoughts, feelings, and behaviors it was expected that new major themes would be identified from the data. In addition, the data were analyzed through double coding of all transcripts, identification of subcategories within each major category and the construction of descriptive grids. The analysis of the data entailed a description of the content of each major category, a description of the content of each subcategory, and a description of the participants. During the final phase of the study, after identifying and delineating major descriptive themes, themes were then clustered into categories related to the phenomena deculturation and bicultural resynthesis. The data was then rebuilt to form a classification of attributes of the phenomena into a thematically relevant whole (Jasper, 1994).

Procedure

The researcher received approval by a head administrator at the worksite to conduct the intervention at their facility. Participants were recruited for the intervention group by telephone and on site visits. Some of the participants had previously responded to the questionnaire that was distributed by Napholz (1995) and had indicated on a form their interest in joining an intervention group for American Indian working women. Other participants were informed about the group through friends. Intervention group sessions were conducted weekly for six consecutive weeks. Each session was audiotaped and each session lasted on the average 100 minutes. To encourage discussion and to promote retention of participants, efforts were made to create a comfortable space within an environment of respect, learning, and credibility. This was accomplished through the sharing of nutritious food and beverages (Attneave, 1982), soft lighting, allowing the group to select the meeting site, and providing flexibility for meeting dates as well as the length of time for each group session. Other strategies to enhance retention were: providing postage-paid postcards for participants to inform the researcher of a change in address or telephone number and weekly pre-session phone calls (Napholz, 1998).

Empowerment or the development of a personal feeling of increased power or control without an actual change in structural arrangements (Pernell, 1985) was a major component of the intervention. Support for empowerment was encouraged through demonstrating genuineness, mutual respect, open communication, and informality with participants (Gutierrez, 1990). The interventions included lecture, self-assessment exercises, homework assignments, and discussion. Discussion took place in the context of collaboration. This was done to facilitate the development of insights, skills, and the capacity to resolve concerns. The focus was on activities ranging from problem exploration to the development of alternative structures. Support was given for the participants to experience a sense of personal power within the intervention group. The intent was for the participants to generalize to feelings of power within their larger social environment. Praxis was also encouraged, which is the blending of reflection and action. A forum was available for emotional and concrete support, and an opportunity to learn new skills through observing others. Other empowerment techniques utilized included, accepting the participants' definition of the stressor, identifying and building existing strengths, identifying forgotten skills/strengths, acknowledging current strengths/skills, and utilizing past/current social support networks and organizations.

The intervention was developed from the results of a previous study (Napholz, 1995), an extensive review of the literature, input from two American Indian women's mental health content experts, and a qualitative research methods expert. The major theme of this part of the

program of research, retraditionalization, focused on the process of going forward by going back. This process incorporated the ceremony of storytelling. The concept of the “talking cure” was utilized as an intervention to encourage the participants to begin telling their own stories in a meaningful way (Tafoya, 1994). Storytelling was utilized as a way of allowing participants to discuss their stories within a supportive network and to learn from other participant’s testimonies, their struggles, triumphs, and defeats (Comas-Diaz, 1994). The focus was not on modal cultural attributes, but rather on the subjective culture of the individual participant (Triandis, Vassiliou, Vassiliou, Ranaka, & Shanmugam, 1972). Subjective culture is the manner in which the participant absorbs, retains, modifies, or applies those discrete cultural attributes that are relevant to the intervention process.

A structured format was used to guide the six one-and-a-half hour intervention sessions. The intervention included a psychoeducational format that incorporated culturally appropriate interventions regarding bicultural stress, self-esteem, guilt, anger, conflict resolution, coping through retraditionalization, and affirmations. Group discussion and peer support was encouraged. Suggestions from the group were encouraged to promote that the intervention would more likely fit and be adapted to the social and cultural milieu to which the participants must function.

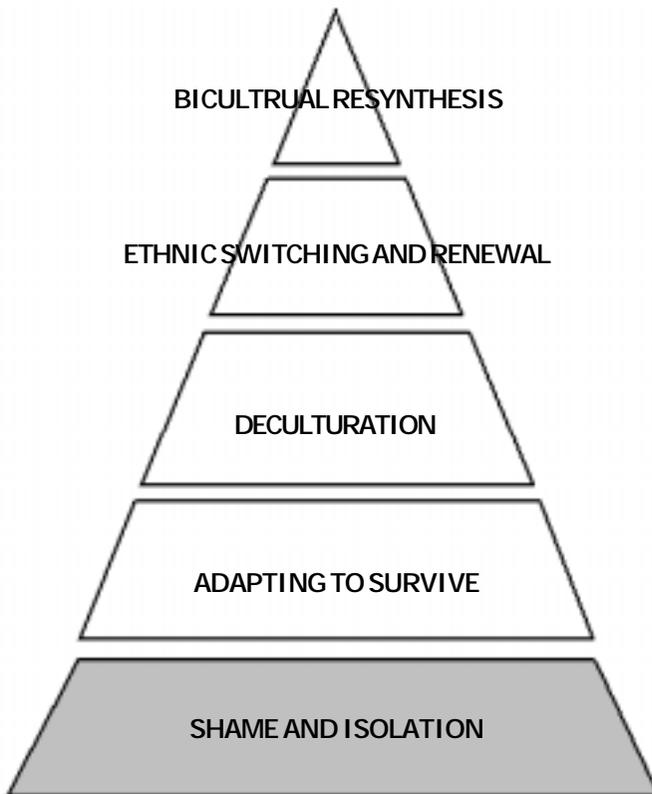
Results

Central Themes and Subthemes of the Study

A hierarchical process emerged that began by breaking out of the dominant culture, breaking free from negativity and oppression, and breaking open to a new way of living with a renewed sense of American Indian pride and identity. The process of going back to go forward unfolded with the ceremony of storytelling, the testimony of experiences of shame and isolation, as well as those illustrating adapting to survive (forced acculturation). For the purposes of this study, “deculturation” is defined as a process where a person releases his or her attachments to mainstream cultural values. The process of deculturation (from the majority) was seen as a necessary process in finding oneself. Deculturation was a conscious choice that, at the time, disrupted family and other significant relationships. “Ethnic switching,” the next step, is defined as a conscious switch in values from the dominant to the nondominant culture. This is reflected in an increased interest and participation in the nondominant culture and customs. Ethnic switching was the next step in this retraditionalization process. This retraditionalization or ethnic renewal seemed to be associated with a sense of increased American Indian pride.

Once there was an understanding of who one was in the context of one's chosen culture, there was a resynthesis into the majority culture for the participants. This reintegration was from a more solid sense of American Indian identity and pride. This final process of going back and reclaiming the self seemed to solidify a sense of pride and knowing who one was and who one wanted to be. There was a blending of both cultures and valued customs. This bicultural resynthesis into the dominant culture was done from a strong ethnic minority base rather than a reassimilation. For ease of understanding, Figure 1 shows the hierarchy of this process.

Figure 1
Bicultural Resynthesis Model



The findings reported here are based on thematic findings of the study. The following is a description of some of the narrations supporting the retraditionalization themes that emerged during the six week intervention.

Shame and Isolation

Most of the participants reported feelings of shame and isolation related to being an American Indian at some time in their lives. One participant, A. L., reported not knowing that she was half American Indian until she was in her 30's. Growing up her mother told her that they [she and her daughter] were Italian. She indicated that she believes her mother was ashamed of her own American Indian heritage, and therefore did not want to acknowledge it. As a child growing up in a predominantly White neighborhood A. L. had feelings of shame and isolation because she was visibly different from the majority. Sadly, her mother still has not acknowledged to A. L. her true American Indian heritage.

A. L.: I grew up not knowing who I was or really having any connection with anything. I was always trying to be what I thought I should be, because that was what my mother was doing. My mother was ashamed that she is Oneida.

A second participant stated:

B. Y.: Well, because I always thought there was something wrong with me anyway, I think I felt partly that it was my fault. There is something wrong with me, they don't address me directly because they don't like me, or something. You know, I really... I don't recall ever thinking about an injustice for myself.

A third participant shared:

C. X.: I thought and felt that I was inadequate for some reason, for that reason [being an American Indian]. I had some very painful experiences as a young child because I had dark skin and dark eyes. So I think because of that difference and that experience, I grew up thinking what I wasn't accepted.

I have heard people sometimes say "I grew up an Indian." In other words they were identified always as an Indian. They were discriminated against. They were oppressed. They were teased. They were ridiculed. You know, all kinds of negative stuff that they had to grow up with. If we have suffered enough we can claim to be real Indians.

A fourth participant said:

D. W.: I can remember being real suicidal, I must have been 12 to 16. I wanted to like take my radio into the tub with me, or if I cut my wrists, how fast would I bleed to death. There was a point in there that I was having a lot of dream stuff going on, and I think that that was probably the very beginning of becoming more aware of who I was. I learned it real young as a kindergartner. I mean it was brought out to me at that point that "you are different" you know? When I was six years old I remember that the kindergartner teacher made me dance around a paper fire because I was Indian, and not only in front of my class, but in front of two classes. I think from that point on I know I was different.

The following are a description of other responses that the participants reported related to shame and isolation.

E. V.: It always made me think that because of the difference I thought that something was wrong with me.

F. U.: What the cultural questions triggered in me was the number of people that dwelled on that with me, and they seem overly concerned about it always, I felt.

G. T.: All I knew was that my difference was somehow bad. I was made to feel that something was wrong with me.

B. Y.: My grandma taught me to be ashamed of my Indianess. Mother taught me not to like myself. I struggle with that.

This grief process resulted in a type of sadness, a "turning of one's face to the wall" (Manson, Shore, & Bloom, 1985). This process seemed to include various stages of disappointment where participants felt alone and sad, and at times worthless. The participants seemed to move through this process similar to what O'Neill (1996) describes from her research on the Flathead Indian narratives of history and identity. Throughout the narratives of loss and sadness, there was a health transformation process going on. This process was an eventual shift from loss and sadness to generosity and compassion.

Adapting to Survive

The participants discussed the difficulty with learning and maintaining their American Indian heritage. Some shared that they were forced to adapt to the majority culture, others had their heritage hidden by their parents, and some families refused to teach or participate in any American Indian traditions. The following examples highlight this denial of culture to make it in the White man's world.

H. S.: I know my parents talk about that a lot, about losing their culture. How come grandma and grandpa didn't do that tradition? That was the era, that was the time that everyone was to be acculturated to the America. So no [Native] language was spoken.

G. T.: I strove to acculturate to the majority culture, but in order to do this and to feel accepted by it, I believed as my parents did, that I had to deny my Indian ethnicity.

One participant, B. Y., recalled her parents indicating to her that it was best to acculturate to the majority culture and to suppress her Indianism as it relates to traditional American Indian cultural practices and beliefs. She was told that this was necessary to make it in the "White man's world" and to be successful in it. Though she grew up on an American Indian reservation and lived with her family, she reported that they did not engage in the traditional American Indian customs that may have helped her to understand and feel connected to her American Indian culture. She stated:

B. Y.: My parents were boarding school kids, so I didn't have tradition, except for the tradition of living together as Indian people, as an extended family on the reservation. That's really the only tradition we had, besides corn soup and fry bread and an occasional powwow. I only went to one powwow between the age of 0 to 18. So that's how disconnected my family, even though on the reservation, separated themselves from being Indian.

One participant commented on family forced acculturation:

E. V.: Father believed if I was ever going to be anything in my life, I had to become like White people and hang with White people and all that. The more Indian you are the less likely you are to succeed. Conflict occurred when I moved off the reservation, to mix, and went to school. My husband was whitewashed on how to be an Indian in this society and that confusion was always there.

Another participant commented:

F. U.: They [White people] want you to be like them, but they are not going to accept you [American Indians], they [American Indians] are forced to be a certain way, to give up their culture and adopt a new culture, but they [White people] are not accepting them into the culture by the people of the dominant culture, by the culture that you are trying to adjust to.

Deculturation

The process of deculturation (from the majority) was seen as a necessary process in finding oneself. This process was a choice that at the time for some, disrupted family and other significant relationships. One participant described this deculturation process as follows:

B. Y.: Even though I cannot go back into the past and grab that part of myself, the part of my Indian heritage that I never had, but I can experience some of that now and be a part of this process and help me to connect with that. There was a time in my life when I was beginning to understand in the more traditional Indian ways, and values, and I got real arrogant and kind of cut off my family.

Ethnic Switching and Renewal

As one participant (A. L.) reported, when she participated in a ceremony of her Oneida tribe, she felt for the first time a sense of belonging. This helped her to understand more about who she is individually and ethnically. This particular woman was estranged from her American Indian heritage for most of her life and felt a deep sense of loss and emptiness, for the first time A. L. felt she was home. She said she is “attempting to release the shame I’ve carried and to gain a sense of self-esteem and self-love I feel I’ve never had.”

Another participant said:

D. W.: I thank creator that what I got inspired in the ways of Indian people—the more traditional ways—and I don’t believe that there are too many traditionalists left, but there are a few traditional beliefs and traditional ways viable yet and I grew to have a sense of love and respect for my children, for their very lives. I think one reason why a lot of people today are going back to find traditional ways to try and help us to find ourselves.

Some of the participants reported that their self-esteem and satisfaction with life were positively impacted through the process of “reclaiming their Indian identity and sense of spirituality.” Some of the ways they have done this have been through traditional song, dance, drumming, ceremony, and spiritual beliefs and practices. One of the women, who has been working to better understand herself in relation to her American Indian heritage, expressed her long-time desire and need to connect with her Indianism on a spiritual level, through traditional spiritual practices and ceremonies. Well into her adulthood, this participant (F. U.) shared about an American Indian woman mentor who helped her with her ethnic renewal. F. U. said, “this person helped me to reclaim my Indianism by teaching me about my Oneida tribe traditional customs and spirituality. I no longer feel ashamed or isolated from my Indian identity.”

Most of the participants expressed sadness at the loss of their traditional languages, indicating that such a loss denied them of an essential and profound part of their American Indian heritage and American Indian identity. This loss of American Indian heritage has been very difficult for them, and Native communities in general, to regain on a large scale. They indicated that very few American Indian people, with the exception of elders, speak their Native tongue. Two of the participants who are honored elders, support ethnic renewal through teaching their Native language to American Indian children, and anyone else who wants to learn, in an effort to pass it on and to preserve it. The status of honored teacher has been a tremendous therapeutic process in providing these teachers with a positive reward for being American Indian. This new found culturally based status has greatly enhanced their sense of purpose and well-being (French, 1987). An example of loss of language was reported by F. U. She sang Christian songs written in Oneida by her ancestors, who were permitted to speak their Native language only when singing Christian songs.

F. U.: I sing the songs not because I believe in the songs, but because I believe in the grandmothers and grandfathers who died to try to preserve their language, and that is the only way the missionaries would allow them to use their language, was to sing, and when I sing those songs in that language, I mean I just cry because I know what they went through. I just love those words, and I love what they stand for.

Bicultural Resynthesis

Resynthesis into the dominant culture was accomplished from a strong ethnic minority base. Participants reported that the intense conflict and stress they once felt between trying to adjust to the majority culture

has been reduced since reclaiming one's American Indian Identity. Other participants reported the following:

B.Y.: If I didn't talk about my whole belief system [retraditionalization], if I didn't talk about what I know as painful subjects in the family [ethnic renewal], I'm fine. I have learned what to say to who.

F. U.: People that I have met and know go to a Methodist church. I wasn't even baptized Methodist, but I like it because a lot of Indian people are there. But they also hold to their traditional beliefs, you know they will all be at gatherings where we do smudges or any kind of smokes and things like that and they will profess that part of what they believe, and then yet they like to go to the other part because there are other Indian people there, and they can believe in some of the Christianity too.

There is no question anymore. I bobble between two worlds of Christianity and Native American spirituality, but there is no question. There is no conflict. I am what I am supposed to be. I have identified me. I need to live that way to make it, to know, assimilate it to make it part of myself.

D. W.: To me, when you are getting open there is a scariness to it because there is a kind of resistance. You are trying to keep things the same and when things start to change, its like the game is up. You can't keep going on with the same things you are doing, and at the same time it feels good. It's good when it happens, but I think the degree it happens to you, is it happens to you in a way that you are ready to deal with it.

Discussion

In summary, these participants were forced to invent their own methods and models to negotiate both the American Indian and Anglo worlds. This was a very stressful and lonely journey that involved grieving personal and tribal losses of language, tradition, and religion. Encouraging the participants to design their own model of bicultural resynthesis based on healthy traditional values and practices within the context of formal group support seemed to facilitate their healing process. The focus on empowerment at the personal level was efficacious for this group.

Encouragement was given to the participants to use the power within to mobilize their abilities to successfully interact within a culturally pluralistic environment. This formal group support network seemed to allow for the discharging of anger and shame associated with historic trauma. Retraditionalization of roles appeared to be an effective means of balancing multiple roles and achieving American Indian self-determination for these participants.

The analysis of the qualitative results also suggests that the concept of ethnic identity and pride is a salient factor for this group of American Indian women. The theme of shame and isolation among the participants may indicate a relationship between poor American Indian identity and mental health. The results support that many of the participants reported such a relationship at times in their life. It seemed at some point they went through a deculturating process of not wanting to belong to the majority culture and wanting to retraditionalize to their American Indian ethnic identity. These findings are supported by French (1987), who found that those who are denied crucial elements of their heritage during the critical formative years attempt to acquire these missing elements through active and regular participation in their culture later on.

Many of the participants spent time with tribal elders seeking instruction in tribal history and traditions, some learned more of their tribal language, some abandoned their Christian religions and turned to Native spiritual traditions, and others incorporated their Native spirituality with Christianity. When the participants were able to connect with, reclaim and participate in their traditional American Indian culture, they seemed to feel an inner peace and a sense of well-being about themselves. These findings are congruent with those from a study by French (1987) of traditionally enculturated Cherokee Indian women. French (1987) found that the reported self-esteem of the women was positively enhanced when they received a positive reward for being American Indian. Tribal customs and traditions have provided sources of strength that provide culturally consistent coping mechanisms (Fixico, 1985; Green, 1983). Further support for retraditionalization of roles of American Indian women as caretakers and transmitters of cultural knowledge is maintained as an effective means of overcoming problems and achieving American Indian self-determination. Many American Indian women, for example, have undertaken a retraditionalization of their former roles as caretakers and transmitters of cultural knowledge within the context of contemporary American Indian life (LaFromboise, Trimble, & Mohatt, 1990; LaFromboise, Heyle, & Ozer, 1990). From this, empowerment through retraditionalization and biculturalism must be considered (LaFromboise, Trimble, et al., 1990).

There is very limited generalizability because the study population was from a small, educated convenience sample located in one geographical area. A more definitive assessment of the process of bicultural resynthesis would require further studies. Longitudinal developmental research

employing probability sampling may provide more sensitivity and insight in assessing the process of retraditionalization and bicultural resynthesis for American Indian women. No inferences can be drawn from this sample, however, these findings support literature from scholars like LaFromboise, Heyle, and Ozer (1990) and LaFromboise, Trimble, and Mohatt (1990). Future evaluation and refinement of the intervention is indicated. An adaptation of relevant components of the curriculum developed by LaFromboise (1989, 1996) to enhance adolescents life development skills has some applicability for this adult women's intervention. Possible relevant components include management of anger, depression, grief, coping, affirmations, problem solving, stress reduction, and self-esteem. Another issue, is the extent to which long standing research conventions may be breeched in order to make interventions culturally appropriate and yet rigorous enough to allow for cross cultural comparisons. For example, the intervention group usually continued to discuss the topics of the week, going over the ninety minute time period. Honoring custom and values regarding the concept of time could interfere with the strict rigors expected by the research community.

Bicultural resynthesis, or the extension of traditional care-taking and cultural transmission roles to include activities vital to the continuity of American Indian communities represents a major current attempt on the part of American Indian women to integrate traditional and contemporary demands in a positive, culturally-consistent manner (Green, 1983). The structure of the cultural system remains intact, but the specific jobs are modernized in accordance with social change.

Metcalfe (1982) applied the acculturation model to urban Navajo women. She found that, "adjustment" should be negatively associated with "traditionalism," positively associated with "acculturation" and enhanced by "social integration" (p. 79). Concepts such as traditionalism and acculturation do not belong at opposite ends of the same continuum, but are, in fact, distinct entities which are capable of independent variation. The degree to which the participants successfully blended two cultures seemed to be positively related to the degree to which they retained traditional behaviors (Metcalfe, 1982). These findings correspond with the study results. In other words, successful traditionalism in the form of bicultural resynthesis for this group of American Indian women included the ability to successfully participate simultaneously in more than one cultural system.

Moving up the pyramid (see Figure 1) involved an end result of bicultural resynthesis with the majority culture, with new strength and an enhanced sense of American Indian pride. These findings also correspond with LaFromboise, Heyle, and Ozer's (1990) discussion of a final process involving a reculturation and reconstruction of ethnicity resulting in a reframing of American Indian identity within the majority culture through the assertion of American Indian pride. The process involved a balance of

traditional and contemporary feminine strengths. Perhaps, the conclusion reached by French (1987), that the positive self-image and psychological well-being of American Indians in general must be reinforced and supported by regular and lifelong involvement in traditionally based practices, is also viable for this group of urban American Indian women. Mihesuah (1996) supports criticalness of reinforcing American Indian identity as a means of supporting tribal survival.

It is possible to infer from the results of this study what Berman (1989) and LaDue (1994) have themselves suggested in their research regarding the mental health of American Indians in general. They indicate that it is absolutely necessary for researchers who are investigating the mental health of American Indians to understand the history that has impacted on Native communities at large, and to be culturally sensitive to their Native traditions, beliefs, and values. Such a sensitivity and understanding can by no means make us experts, as LaDue (1994) has pointed out, but it can help health professionals to understand the multitude of mental health issues that are impacting on the mental health of American Indian communities. Hopefully, this research will contribute to the recognition of the positive values of certain culturally grounded behaviors and attitudes that can support healthy change (O'Neil, 1996). Additionally, support for increased research on culturally normative behaviors, ability to differentiate between adaptive and maladaptive behavior, appropriate interpretation of symptoms, and advice that is supportive of cultural norms is critical. Increased research, understanding, and respect is necessary to avoid an imposition of Euro-American values that may unwittingly perpetuate a powerful deligitimizing of American Indian women's life, ways, and values (O'Neil, 1996, p. 208)

Previous studies which focused on isolated aspects of American Indian women's lives without understanding their complexity and cultural contexts are finally being supplemented by American Indian women's own reflections and research (Green, 1983). Attention to the coping styles and life-styles of biculturally competent American Indians is necessary for a shift in focus away from a deficit hypothesis to the design of interventions that build on the natural strengths of American Indian women and communities considered (LaFromboise, Trimble et al., 1990). These sense that their participation in the various aspects of traditional Native culture (such as drumming, singing, dancing, and spiritual practice) has given the participants a sense of spirituality, belonging, and wholeness, and has allowed them to feel profoundly connected to who they are as American Indian women. The fact that several of the women reported that their self-esteem and satisfaction with life were positively impacted through reclaiming their Native traditions (which includes spirituality) gives warrant to more investigation into the relationship between a positive Native identity and mental health (Tafoya & Del Vecchio, 1996).

The research findings support the contextual paradigm that focuses on the study of the individual; within the context of a family, which is in turn embedded in a cultural context which is exposed to both Native and mainstream values and customs (Szapocznik & Kurtines, 1993). The struggle may be supporting autonomy while maintaining family connectedness. They recommend support, to enhance bicultural skills and promote greater competency, in managing cultural differences within family and society. In past eras, in American history, cultural diversity was rejected by social, cultural, and political norms. There was pressure for culturally diverse people to blend. However, according to Szapocznik and Kurtines (1993), if current trends continue, they hope that cultural diversity will be respected, perhaps even cherished and nurtured. "To the extent that we nurture cultural diversity, while promoting interethnic relations, we create a world in which families will be living increasingly at the interface between culture and customs" (p. 406). We need to adjust our thinking to broader framework that we live within a culturally pluralistic environment.

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