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Comparison of Cigarette Smoking Knowledge, Attitudes, and Practices among Staff in Perinatal and Other Substance Abuse Treatment Settings

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Abstract

Objectives—Despite the high prevalence and known morbidity and mortality caused by cigarette smoking, 60–70% of substance abuse treatment programs lack smoking cessation counseling or fail to offer pharmacotherapy for smoking cessation, including those programs designed to meet the needs of drug-dependent pregnant patients. Previous studies of staff knowledge, attitudes, and practices (S-KAP) at general substance abuse/HIV treatment programs have suggested that staff may contribute to the deficiency in smoking cessation treatment in these settings. It is not known whether similar deficiencies exist at perinatal substance abuse treatment programs.

Methods—This study compared cigarette S-KAP in perinatal substance abuse (n=41) and general substance abuse/HIV treatment (Veterans Affairs [VA] medical center, hospital-, and community-based) workforce samples (n=335).

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Results—Significant differences were seen between the two groups on all measures, but perinatal staff compared favorably to general staff only on measures of barriers to smoking cessation services. Perinatal staff compared unfavorably on all other measures: knowledge, beliefs/attitudes, self-efficacy, and smoking cessation practices. Pair-wise comparisons of knowledge and beliefs/attitudes revealed a significant difference between perinatal and VA staff; of self-efficacy, between perinatal and staff at all other settings; and of smoking cessation practices, between perinatal and VA and community-based staff.

Conclusions—These results – showing deficiencies of perinatal staff on most S-KAP measures – are concerning and suggest that identifying gaps in and improving S-KAP in perinatal substance abuse programs is urgently needed, for which the VA may provide an efficacious model.

Keywords

pregnancy; perinatal; smoking; tobacco; nicotine; services

1. Introduction

In the United States (U.S.), 8.6 million individuals are affected by illnesses due to smoking (Centers for Disease Control and Prevention (CDC), 2009). Each year, approximately 443,000 Americans die prematurely from cigarette smoking or exposure to secondhand smoke, making smoking the single most preventable cause of disease, disability, and death in the U.S. (Centers for Disease Control and Prevention (CDC), 2009). Cigarette smoking during pregnancy remains the largest modifiable risk factor of pregnancy-related morbidity and mortality (Dempsey & Benowitz, 2001). Maternal smoking increases the risk of impaired fetal growth, pre-term birth, and low birth weight, among other poor birth outcomes(Bada et al., 2005; D'Onofrio et al., 2003; Knopik et al., 2005; McCowan & Horgan, 2009; Salihu et al., 2008; Stroud et al., 2009; Thiriez et al., 2009). Despite these well-known pregnancy-related adverse consequences, nearly 21% of reproductive-age women in the U.S. smoke cigarettes(Centers for Disease Control and Prevention (CDC), 2008) and roughly 13% continue to smoke during pregnancy (Tong et al., 2009).

About 70–90% of all patients with substance use disorders (SUDs) smoke cigarettes and these patients exhibit SUDs of greater severity compared to non-smokers (Grant, Hasin, Chou, Stinson, & Dawson, 2004; Weinberger & Sofuoglu, 2009). Most substance abuse treatment programs primarily focus on treating alcohol and illicit SUDs, despite the devastating health consequences of cigarette smoking that, in individuals with SUDs, can be greater than those of the SUD itself (Guydish et al., 2011; Hurt et al., 1996; Mackowick, Lynch, Weinberger, & George, 2012). Despite the high prevalence and known morbidity and mortality caused by cigarette smoking, 60–70% of substance abuse treatment programs lack smoking cessation counseling or fail to offer pharmacotherapy for smoking cessation (Baca & Yahne, 2009; Friedmann, Jiang, & Richter, 2008; Fuller et al., 2007). Staff members at substance abuse treatment programs generally consider cigarette smoking and its treatment to be of low priority, erroneously believing that smoking cessation treatment may interfere with the treatment of the patient's primary SUD (Gill & Bennett, 2000; Joseph, Willenbring, Nugent, & Nelson, 2004; Nieva, Ortega, Mondon, Ballbe, & Gual, 2011; Sharp, Schwartz, Nightingale, & Novak, 2003). Despite this reluctance to make

smoking cessation a priority in substance abuse treatment, there is an immense need to address cigarette smoking in these and other vulnerable populations.

Among opioid-dependent pregnant patients, the prevalence of cigarette smoking is more than 4 times higher compared to the general pregnant population (Tong et al., 2009). Previous research has suggested that, although the majority of substance-dependent pregnant patients desire to quit smoking during pregnancy out of concern for fetal health (Chisolm et al., 2010; DiClemente, Dolan-Mullen, & Windsor, 2000; McBride, Emmons, & Lipkus, 2003; Solomon & Quinn, 2004), obstacles to smoking cessation treatment exist even at substance abuse treatment programs designed to meet the needs of drug-dependent pregnant patients (Heil, Linares Scott, & Higgins, 2009). Insights into these treatment barriers may be gleaned from previous studies of staff knowledge, attitudes, and practices (S-KAP) at general substance abuse/HIV treatment programs (Delucchi, Tajima, & Guydish, 2009; Tajima et al., 2009). These assessments have suggested that staff lack of knowledge and negative attitudes towards smoking cessation as part of substance abuse treatment, coupled with staff cigarette smoking practices, may contribute to the deficiency in smoking cessation treatment in these settings (Delucchi et al., 2009; Mackowick et al., 2012; Tajima et al., 2009). Only one published study has compared cigarette S-KAP of patients and staff in a perinatal substance abuse treatment program (Chisolm et al., 2010). In that study, which used the same S-KAP instrument as the current study, staff significantly underestimated patient desire to quit smoking, suggesting that S-KAP may be a barrier in perinatal, as well as general substance abuse treatment settings.

The primary objective of the current study was to compare previously unreported cigarette smoking S-KAP at a perinatal substance abuse treatment program and previously published findings of S-KAP at 11 other substance abuse/HIV treatment settings (Veterans Affairs medical centers, hospital-based, and community-based), based on survey data collected during the period of April 2005 through October 2007 across all settings (Tajima et al., 2009). The authors hypothesized that, due to maternal cigarette smoking's role as a major modifiable risk factor for pregnancy morbidity and mortality, perinatal substance abuse treatment S-KAP would reflect greater knowledge, more optimistic beliefs/attitudes towards smoking behavior change, greater self-efficacy, reduced cigarette smoking practice, and perception of fewer barriers to smoking cessation treatment compared to S-KAP at other treatment settings. Comparing S-KAP across treatment settings may also reveal specific differences regarding smoking cessation treatment among staff serving different populations of substance-dependent patients in different settings. These differences may help further identify gaps in S-KAP, the first step toward implementing effective smoking cessation treatment programs within substance abuse treatment settings, including those addressing the needs of pregnant women.

2. Methods

2.1. Participants

This study compared survey item responses from a perinatal substance abuse treatment workforce (n=41) and a general substance abuse/HIV treatment workforce sample (n=335). The general sample was comprised of staff from 11 treatment sites, categorized into 3 types:

VA medical centers (n=56), hospital-based (n=101), and community-based (n=178) with a response rate of 88%, across all of these settings (Tajima et al., 2009). Response rate for staff in the perinatal substance abuse treatment program was 68% (41 of 60). S-KAP surveys were distributed to interested staff in the Johns Hopkins Center for Addiction and Pregnancy (CAP). Staff included faculty and staff employees from the Johns Hopkins University (JHU) and Johns Hopkins Bayview Medical Center (JHBMC). Any JHU or JHBMC employee working at least 50% of the time at CAP was eligible for participation.

2.2. The Clinical Site

CAP is a multidisciplinary perinatal outpatient substance abuse treatment program located at JHBMC. CAP provides comprehensive health care, including substance abuse treatment, psychiatry, pediatrics, obstetrics/gynecology, and family planning, for up to 100 substance-dependent pregnant women and their children. CAP offers treatment for the range of physical, emotional, and social problems caused by addiction, and provides on-site overnight housing available for up to 16 patients on an as-needed basis. The CAP treatment model, considered internationally exemplary, has been described in detail elsewhere (Jansson et al., 1996).

2.3. Assessment Instrument: Staff KAP (S-KAP)

The S-KAP instrument was developed to measure cigarette S-KAP among staff working at substance abuse treatment programs. Details regarding its development, including context of use, psychometric properties, scoring, and scale development –including reliability and validity -, have been previously reported (Delucchi et al., 2009). Responses obtained from the S-KAP provide insights into substance abuse treatment staff members' ideas, beliefs/attitudes, and activities, which can help guide treatment programs' practices related to smoking cessation (Delucchi et al., 2009). Items included in the S-KAP were derived from a variety of published sources including healthcare professionals (Borrelli et al., 2001; Velasquez et al., 2000), the National Cancer Institute's 4A's for smoking cessation (Glynn, Manley, & Pechacek, 1990), the Fagerström Test for Nicotine Dependence (FTND) (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991), and the CDC Adult Tobacco Survey (Centers for Disease Control and Prevention (CDC), 2008).

For the current study, the original S-KAP instrument 120-item content was modified slightly to reflect the unique aspects of a perinatal substance abuse treatment setting. The modified S-KAP contains 117 items: 98 questions from the original S-KAP instrument were retained without any changes in the modified S-KAP, 15 were removed, 7 were changed slightly, and 12 were added. These modifications included demographic items regarding staff role and gender that were removed/changed to protect participant confidentiality, demographic items regarding years of experience working in the field of obstetrics and pediatrics that were added to capture the roles of the multidisciplinary team, and knowledge items regarding maternal smoking and its risk towards increasing miscarriage, low birth weight, and Sudden Infant Death Syndrome that were added to reflect the unique risks of smoking during pregnancy. The survey's knowledge items were modified with input from perinatal experts, including the PI of a NIDA-funded trial of a behavioral intervention for pregnant smokers; a review of the literature; and review of pertinent web-based resources from the Partnership

for Smoke-free Families (e.g., http://www.tobacco-cessation.org/sf/pdfs/cpr/22)%20San%20Diego%20PSFF%20Manual.pdf) and the American College of Obstetricians and Gynecologists (e.g., https://www.acog.org/~/media/Departments/Tobacco%20Alcohol%20and%20Substance%20Abuse/SCDP.pdf). The modified S-KAP instrument consists of 3 main sections (as did the original instrument) targeting areas such as demographics and job characteristics (19 items), cigarette smoking (19 items including a modified FTND), and staff knowledge, attitudes, and practices (79 items). Items from Section 3 of the modified S-KAP Instrument were previously divided into 5 different scales with "substantive meaning" (Delucchi et al., 2009): 1) knowledge, 2) beliefs/attitudes, 3) self-efficacy, 4) smoking cessation practices, and 5) barriers to providing smoking cessation services (lower score on barriers scale indicates fewer perceived barriers). Examples of knowledge items are "Smoking increases the risk of poor wound healing" and "Hazards of smoking clearly demonstrated;" beliefs/attitudes, "Counseling by a clinician motivates to quit" and "Clinicians should make appointments to help;" self-efficacy, "I have the required skills to help my patients quit" and "My patients follow my advice about behavior;" smoking cessation practices, "Encourage patients to stop smoking completely" and "Ask patients whether they smoked;" barriers, "Lack of patient education material" and "lack of reimbursement."

2.4. Procedures

Procedures were approved by the local institutional review board. Each participant packet contained the S-KAP survey, along with an envelope, neither of which contained any identifying information. The first page of the survey notified staff that (1) participation was voluntary, (2) survey completion would indicate consent to participate, and (3) survey completion would be compensated with a five-dollar gift certificate. A member of the study team explained the objective of the study to all staff during a CAP full staff meeting. Flyers were distributed near employee mailboxes at CAP announcing the study. Under each flyer were stacks of survey packets, for interested employee members to take and complete. Surveys were distributed and completed during the period of October 9 through November 18, 2008. Once completed, participants placed their anonymous surveys in a plain envelope and deposited them in a designated collection box. At that time, a study team member gave participants their complementary gift cards. Later, a different study team member opened the envelopes and recorded the anonymous data into a spreadsheet.

2.5. Data Analysis

Comparisons were first made to examine whether there was an overall statistically significant difference among the 4 treatment settings, using chi-square or ANOVA as appropriate. In order to reduce the total number of comparisons conducted, only when those comparisons resulted in overall significant differences were selected pair-wise comparisons (either chi-square or t-test) then conducted (between the perinatal program and each other treatment setting). Only items contained in both the original and modified versions of the survey were compared.

3. Results

3.1. Staff Demographics

Comparisons of several demographic variables among the 4 treatment settings are shown in Table 1. No overall differences were found in race/ethnicity or hours/week direct patient contact. Differences were found in educational level and recovery status, with staff at the perinatal program more likely to have a Bachelor's educational level and less likely to be in recovery than staff at community-based settings (*p<0.001)*. Staff at the perinatal program also differed significantly in the three smoking status categories compared to staff at VA and community-based settings (*p<0.001)*. In addition, perinatal staff reported significantly fewer years working in their current substance abuse treatment program than staff at VA *(p<0.001)*, hospital- (*p<0.001*), and community-based (p=0.002) settings.

3.2. Staff Knowledge, Attitudes, and Practices

Results of S-KAP comparisons among the 4 treatment settings are shown in Table 2. Overall differences were seen among the 4 treatment settings in all S-KAP scales (*p<0.001)*. Pair-wise comparisons of mean (SD) knowledge revealed differences between perinatal [4.10 (0.72)] and VA staff [4.5 (0.59)] (*p=0.002)*. Comparisons of beliefs/attitudes also revealed differences between staff at these two settings: [3.48 (0.55)] and [4.3 (0.60)] (*p<0.001)*, respectively. Comparisons of self-efficacy showed differences between perinatal staff [2.69 (0.47)] and staff at all other treatment settings: VA [3.6 (0.57)], hospital- [3.0 (0.53)], and community-based [3.0 (0.54)] (*p<0.001)*. Comparisons of smoking cessation practices revealed differences – although in different directions - between perinatal staff [2.66 (0.99)] and staff at VA [3.5 (0.96)] (*p<0.001)* and community-based [2.2 (0.91)] (*p=0.005)* treatment settings. Lastly, comparisons of barriers to providing smoking cessation services revealed differences – in favor of the perinatal treatment program – between perinatal staff [1.98 (0.61)] and staff at all other treatment settings: VA [2.7 (0.74)],, hospital- [3.0 (0.52)], and community-based [3.1 (0.58)] (*p<0.001)*.

4. Discussion

There was a significant overall difference among the 4 treatment settings on all S-KAP scales. Pair-wise comparisons of knowledge and beliefs/attitudes revealed a significant difference between perinatal and VA staff. Pair-wise comparisons of self-efficacy showed significant differences between perinatal and staff at all other settings; and of smoking cessation practices, between perinatal and VA and community-based staff.

In light of high smoking prevalence among individuals with SUD (particularly among pregnant women), the results presented here regarding differences in cigarette smoking S-KAP among the 4 treatment settings is of particular value for directing modification of these programs. Although the authors hypothesized that, due to maternal smoking-associated pregnancy morbidity and mortality risks, perinatal substance abuse treatment S-KAP would reflect greater knowledge, more optimistic beliefs/attitudes towards smoking behavior change, greater self-efficacy, reduced cigarette smoking practice, and perception of fewer barriers to smoking cessation treatment compared to S-KAP at other treatment settings, these results offer a more nuanced picture. Perinatal substance abuse program staff

perceived fewer barriers to smoking cessation treatment services compared to staff at all other treatment settings. In addition, perinatal program staff outperformed staff at community-based treatment settings on smoking cessation practices. However, on all other S-KAP scales, perinatal staff performed only equivalently to or worse than staff at other settings. Specifically, on measures of smoking cessation practices, perinatal staff performed equivalently to staff at hospital-based settings and underperformed on these measures compared to VA medical center staff. Similarly, on measures of knowledge and beliefs/attitudes perinatal program staff performed equally to staff at hospital- and community-based settings, but again underperformed compared to staff at VA medical center settings. Finally, staff in all general treatment settings including VA medical centers outperformed perinatal program staff on measures of smoking-related self-efficacy. These results identify one area of strength (perception of fewer barriers) and multiple gaps (knowledge, beliefs/attitudes, self-efficacy, practices) in perinatal program S-KAP and represent a first step toward implementing effective smoking cessation treatment programs for drug-dependent pregnant patients. After a brief consideration as to the one area of strength suggested by these results, the remainder of the discussion will focus on those measures for which perinatal program staff showed relative deficiencies overall.

The finding that perinatal substance abuse program staff perceived fewer barriers to smoking cessation treatment services compared to staff at other settings overall as well as at specific treatment settings is not surprising. There is ample evidence in the literature that the majority of substance-dependent pregnant patients view pregnancy as a “window of opportunity” for behavior change and are highly motivated to quit smoking during pregnancy out of concern for fetal health (Chisolm et al., 2010; DiClemente et al., 2000; McBride et al., 2003; Solomon & Quinn, 2004). Also, in the United States, all pregnant women are able to access health insurance, thus removing one potential barrier for smoking cessation services for patients attending a perinatal substance abuse treatment program. In addition, the study’s perinatal substance abuse treatment program site (CAP) was specifically designed to reduce service barriers by providing comprehensive health care on-site, including access to smoking cessation medication-prescribing physicians (psychiatrists, pediatricians, and obstetrician/gynecologists) (Jansson et al., 1996), which may explain the perinatal staff members’ perception of fewer barriers compared to staff at the other substance abuse treatment settings.

The VA staff’s superlative performance on smoking cessation knowledge, beliefs/attitudes, and practices has been reported previously in the literature and attributed to the VA system’s comprehensive educational efforts, focused mission of culture change, and well-established procedures to support staff in reducing their own, as well as their patients, smoking (Tajima et al., 2009). Although the results of the current study suggest perinatal program staff outperformed staff at community-based treatment settings on smoking cessation practices, given the significant health risks to the fetus of maternal smoking, this is an area in which perinatal substance abuse treatment programs must strive to excel. Perinatal substance abuse programs may benefit from the experience of the VA system(Sherman et al., 2006) and/or adapting the U.S. public health service clinical practice guidelines for tobacco abuse(Fiore, 2000) to pregnant women within substance abuse treatment programs.

Finally, perinatal program staff's underperformance on measures of self-efficacy, compared to staff in VA medical center, hospital- and community-based treatment settings, is – in some ways - surprising. The perinatal program staff reported a significantly higher educational level and lower prevalence of smoking and being in recovery compared to community-based program staff, yet lagged behind community-based staff in self-efficacy. However, these findings are consistent with previous observations(Heil et al., 2009) and may reflect the relative lack of safe and effective smoking cessation pharmacologic treatments available for use in pregnancy compared to use in general populations. Nevertheless, the results are concerning.

Limitations to this study include generalizability to other perinatal programs, a limited sample size, inclusion of HIV clinics as comparison programs (although the perinatal program does offer HIV care in addition to substance abuse treatment for drug-dependent pregnant women), and modification of the measurement scale. The perinatal program – although considered an exemplary model program of its type - was a relatively small sample of convenience and was not selected specifically to be representative of other perinatal substance abuse treatment programs with regards to smoking cessation services. The potential confounding of differences given the inclusion of HIV clinics has been commented on previously(Tajima et al., 2009) and this limitation applies to the current study as well. The staff survey was modified for the perinatal program and the original survey's scales were based on factor analyses that are relatively new to the literature (Delucchi et al., 2009).

5. Conclusions

Improving knowledge, beliefs/attitudes, and self-efficacy; and decreasing cigarette smoking among staff in perinatal substance abuse treatment settings are essential strategies for reducing the high rate of smoking among drug-dependent women. The VA medical center system has been effective at developing an approach for making smoking cessation a priority and has been a model for other hospital- and community-based general substance abuse treatment programs. Individual substance abuse treatment programs that serve pregnant patients may benefit from adapting such proven institutional strategies, however government policies and availability of more effective behavioral and pharmacologic treatments will also play a role in reducing cigarette smoking in this vulnerable population.

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Table 1

Comparison of staff characteristics across treatment settings

Staff Characteristic	Perinatal substance abuse treatment program (a) (*n*=41)[1]	Veterans Affairs medical settings (b) (*n*=56)	Hospital-based settings (c) (*n*=101)	Community- based settings (d) (*n*=178)	P-value[2]
Race/Ethnicity % (*n*)					
White	55 (22)	59 (33)	50 (51)	59 (105)	$\chi^2$11.18 (df=6) *p=0.08*
African-American	35 (14)	21 (12)	21 (21)	25 (45)	
Other	5 (2)	20 (11)	29 (29)	16 (28)	
Asian	2.5 (1)	-	-	-	
American Indian or Alaska Native	2.5 (1) (*n*=40)	-	-	-	
Education % (*n*)					
Less than Bachelor's level	31.7 (13)	25 (14)	37 (37)	60 (107)	$\chi^2$31.17 (df=3) ***p<0.001***
Bachelor's level or higher	68.3 (28)	75 (42) $\chi^2$0.53 (df=1) *p=0.47*[3]	63 (64) $\chi^2$0.31 (df=1) *p=0.58*	40 (71) $\chi^2$10.86 (df=1) ***p<0.001***	
Certified/Licensed % (*n*)	32.5 (13) (*n*=40)	30 (17) $\chi^2$0.05 (df=1) *p=0.82*	21 (21) $\chi^2$2.15 (df=1) *p=0.14*	49 (87) $\chi^2$3.528 (df=1) *p=0.06*	$\chi^2$23.61 (df=3) ***p<0.001***
Smoker % (*n*)					
Current	17.1 (7)	2 (1)	13 (13)	40 (72)	$\chi^2$64.34 (df=6) ***p<0.001***
Former	36.6 (14)	53 (30)	42 (42)	42 (75)	
Never	46.3 (19)	45 (25) $\chi^2$8.71 (df=2) ***p=0.01***	45 (45) $\chi^2$0.79 (df=2) *p=0.67*	16 (28) $\chi^2$20.22 (df=2) ***p<0.001***	
In recovery % (*n*)	9.8 (4)	15 (8) $\chi^2$0.39 (df=1) *p=0.53*	19 (19) $\chi^2$1.63 (df=1) *p=0.20*	64 (113) $\chi^2$38.57 (df=1) ***p<0.001***	$\chi^2$93.14 (df=3) ***p<0.001***
Mean (SD) years in field in current program	4.6 (6.1) (*n*=36)	12.8 (9.2) t=5.16 ***p<0.001***	11.5 (7.8) t=5.44 ***p<0.001***	8.1 (7.1) t=3.09 ***p=0.002***	ANOVA 13.02 ***p<0.001***
in current position	3.7 (4.2) (*n*=40)	-	-	-	

Staff Characteristic	Perinatal substance abuse treatment program (a) (*n*=41)[1]	Veterans Affairs medical settings (b) (*n*=56)	Hospital-based settings (c) (*n*=101)	Community- based settings (d) (*n*=178)	P-value[2]
in field of addiction	6.7 (7) (*n*=37)	-	-	-	
in field of obstetrics	2.5 (4.8) (*n*=33)	-	-	-	
in field of pediatrics	1.7 (5.1) (*n*=31)	-	-	-	
Mean (SD) hours/week direct patient contact	25.8 (13.1)	25.7 (8.8)	25 (10.7)	28.3 (11.2)	F 2.31 *p=0.08*

[1] Staff characteristics in column (a) are based on an n of 41, unless otherwise indicated, due to missing participant data

[2] Overall comparison of all 4 treatment settings (a, b, c, and d)

[3] Pair-wise comparisons of perinatal program (a) to each of the other 3 treatment settings (b, c, or d), conducted only when overall comparison was significant

Table 2

Comparison of Staff Knowledge, Attitudes, and Practices (S-KAP) across different treatment settings

Scale Mean (SD) **Survey Item Mean (SD)**	**Perinatal substance abuse treatment program modified S-KAP (a) (*n*=41)**	**Veterans Affairs medical settings original S-KAP (b) (*n*=56)**	**Hospital- based settings original S-KAP (c) (*n*=101)**	**Community- based settings original S-KAP (d) (*n*=178)**	**P-value[1]**
Knowledge (Original Items)	4.1 (0.7)	4.5 (0.6) t=2.91 ***p=0.002***[2]	4.1 (0.8) -	4.1 (0.6) -	F 5.95 ***p=0.001***
Beliefs and Attitudes	3.5 (0.6)	4.3 (0.6) t=6.979 ***p<0.001***	3.6 (0.6) t=1.15 *p=0.126*	3.4 (0.6) t=0.825 *p=0.794*	F 33.29 ***p<0.001***
Self Efficacy	2.7 (0.5)	3.6 (0.6) t=8.603 ***p<0.001***	3 (0.5) t=3.43 ***p<0.001***	3 (0.5) t=3.698 ***p<0.001***	F 25.85 ***p<0.001***
Practices	2.7 (1)	3.5 (1) t=4.18 ***p<0.001***	2.5 (1) t=0.86 *p=0.38*	2.2 (0.9) t=2.87 ***p=0.005***	F 27.33 ***p<0.001***
Barriers	2 (0.6)	2.7 (0.7) t=5.24 ***p<0.001***	3 (0.5) t=9.41 ***p<0.001***	3.1 (0.6) t=10.70 ***p<0.001***	F 38.51 ***p<0.001***

[1] Overall comparison of all 4 general treatment settings (a, b, c, and d)

[2] Pair-wise comparison of perinatal program (a) to each of the other 3 treatment settings (b, c, or d), conducted only when the overall comparison was significant