Increasing substance use disorder counselors' self-efficacy and skills in talking to patients about sex and HIV risk: A randomized training trial

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ABSTRACT

Background: People with substance use disorder (SUD) experience increased risk for HIV, Hepatitis C, and sexually transmitted illnesses via risky sex. This high-risk population would benefit from sexual risk reduction interventions integrated into SUD treatment. However, many SUD counselors report lack of skill or confidence in addressing sexual risk with patients.

Methods: This study was part of a larger nested 2 × 2 factorial repeated measures design, which compared two levels of counselor training (Basic-2 h versus Enhanced-10 h plus ongoing coaching). We determined whether counselors receiving Enhanced training addressing their motivation, confidence and skills (a) increased knowledge about sexual issues; (b) increased self-efficacy to discuss sex with patients; and (c) improved skills in discussing sex as part of SUD treatment, compared with those receiving shorter information-based training. Counselors providing individual therapy at two opioid treatment programs (OTP) and two psychosocial out-patient programs in the United States were eligible. Randomization occurred after Basic training. Measures included self-report (self-efficacy and knowledge) and blinded coding of standardized patient interviews (skill).

Results: Counselors receiving Enhanced training (n = 28) showed significant improvements compared to their Basic training counterparts (n = 32) in self-efficacy, use of reflections, and use of decision-making and communication strategies with standardized patients. These improvements were maintained from post-training to 3-month follow-up. No adverse effects of study participation were reported.

Conclusions: Results suggest that counselors can improve their knowledge, self-efficacy and skill related to sexual risk conversations with patients based on modest skills-based training.

1. Introduction

People with substance use disorders (SUD) are at disproportionate risk for HIV, Hepatitis C and sexually transmitted illnesses (STI) due to associated sexual and injection risk behavior (Centers for Disease Control and Prevention (CDC, 2015, 2016, 2017). Because sex and drug use are behaviorally entwined (Calsyn et al., 2010), this high risk population would benefit from sexual risk reduction interventions integrated into SUD treatment services. Despite over 25 years of HIV prevention and treatment, and declining infection rates overall, the

Director of the National Institute on Drug Abuse described the link between HIV, substance use and sexual risk as an "urgent" need demanding integrated HIV related services within SUD treatment (Volkow and Montaner, 2011). The relevance of addressing sexual risk in SUD treatment is underscored by recent increases in methamphetamine injection in some areas of the United States (Al-Tayyib et al., 2017; Glick et al., 2018) and the critical role of sexual networks in HIV transmission risk (Nadol et al., 2016; Freeman et al., 2011; Sewell et al., 2017).

Despite the need, many treatment providers do not feel competent or comfortable assessing and discussing sexual risk with patients in SUD
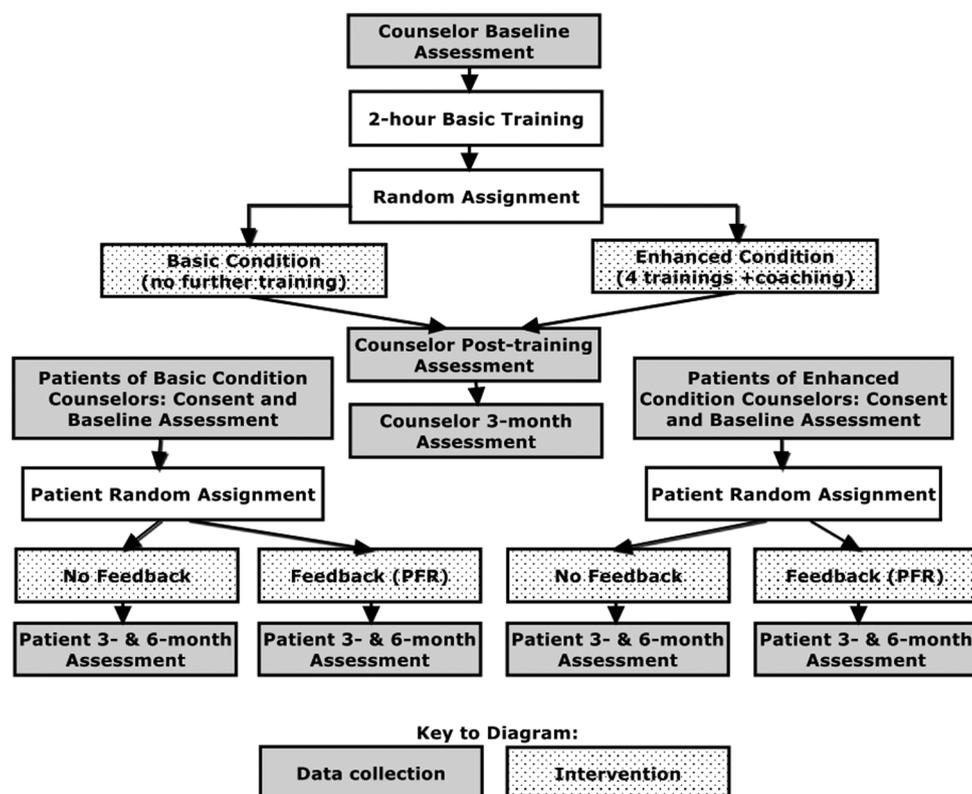
Fig. 1. Counselor and patient study design.

treatment (Haynes et al., 2008). Mitchell and Oltean (2007) examined counselor attitudes about integrating HIV prevention into their work, finding that one-third did not feel competent to carry out an HIV sexual risk assessment, less than one-third believed their patients were open to discussions about HIV risk behaviors, and almost half endorsed feeling uncomfortable working with patients who continually engage in behaviors that put others at risk. Moreover, 43% of SUD treatment programs in the US do not provide HIV education or counseling (Satterwhite et al., 2013). On the other hand, SUD treatment counselors are in an ideal position to provide sexual risk behavior interventions since they have an established relationship with their patients and understand the patient's history and current circumstances (Brown, 2000).

Training can improve clinicians' comfort and skill in discussing sexual issues. However, existing research has primarily studied medical providers, not SUD treatment counselors. Several studies have focused on training HIV care providers to conduct sexual risk assessment and interventions (Dreisbach et al., 2014; Kelly et al., 2000; Myers et al., 2013; Patel et al., 2012; Rose et al., 2010; Thrun et al., 2009), and other studies have targeted primary care or other non-HIV specialty care providers (Bluespruce et al., 2001; Bradley-Springer et al., 2006; Dodge et al., 2001). Provider outcomes in these studies included more favorable attitudes toward risk assessment and intervention (Bluespruce et al., 2001; Bradley-Springer et al., 2006; Thrun et al., 2009), greater confidence in one's own ability to effectively carry out prevention strategies (Bluespruce et al., 2001; Dreisbach et al., 2014; Thrun et al., 2009), greater comfort delivering interventions (Thrun et al., 2009), and greater frequency delivering prevention interventions (Bradley-Springer, 2006; Dreisbach et al., 2014; Thrun et al., 2009).

Study designs included a mechanism to improve maintenance of training effects, such as booster sessions (Patel et al., 2012; Rose et al., 2010; Thrun et al., 2009), ongoing clinical consultation (Kelly et al., 2000), and messaging to providers over a post-training period (Bluespruce et al., 2001; Dodge et al., 2001). Maintenance of training gains varied across studies with some showing effects as far out as 6 or

12 months from training (Dreisbach et al., 2014; Kelly et al., 2000; Myers et al., 2013; Patel et al., 2012; Rose et al., 2010; Thrun et al., 2009) and others showing some decline over time (Bradley-Springer et al., 2006; Dodge et al., 2001). Maintenance of provider behavior changes after training has been identified as an implementation challenge (Cohen et al., 1994; Gerbert et al., 2003). Despite the preponderance of work focusing on medical provider training on discussing sexual risk, findings may not generalize to SUD counselors due to differences in educational model, experience, patient relationship, and organizational role.

This study's goal was to develop and test a training curriculum to improve SUD counselors' comfort and skill discussing sex and HIV risk reduction with their patients. The curriculum focuses on counselor motivation to discuss sex with patients, their confidence in their ability to do so, their skills in addressing patient motivation, and skills in using decision-making and communication tools with patients.

1.1. Hypotheses

In a randomized clinical trial, two levels of counselor training (Basic-2 h versus Enhanced-10 h plus ongoing coaching) were compared. Training conditions are described below. The research question was whether counselors receiving Enhanced training that included information, motivation, and skills modules (a) increased knowledge about sexual issues; (b) increased self-efficacy to discuss sex with patients; and (c) improved skills in discussing sex as part of SUD treatment, compared with those receiving shorter information-based Basic training.

2. Materials and methods

This paper reports only on counselor outcomes from a randomized counselor training trial embedded within a nested 2 × 2 factorial repeated measures design (Fig. 1). In the training trial, one session of Basic Training was provided to all enrolled SUD counselors, after which

they were randomly assigned to two equally sized groups, one receiving no further training, the other receiving multi-session Enhanced training in talking with patients about sex. Counselor participant outcomes (knowledge, self-efficacy, skills) were analyzed for this report, and were assessed at baseline, 1-week post-training and 3 months post-baseline. The counselor portion of the trial is shown in the top portion of Fig. 1, and results of this part of the study are reported here. Shown in the bottom portion of Fig. 1, enrolled patients of participating counselors provided data about their sexual behavior and were then randomly assigned to receive or not receive a Personalized Feedback Report (PFR). Patient outcomes and the effects of the PFR will be reported in a separate manuscript. Human Subjects Approval for the entire study was obtained from the Human Subjects Division of the University of Washington's Office of Research (Application # 48767).

2.1. Sample

Counselors were recruited from two opioid treatment programs (OTP) and two psychosocial outpatient programs in the United States Pacific Northwest. Counselors were recruited via a letter from the clinic director and a brief presentation at a staff meeting. Interested counselors were contacted by agency research staff who obtained informed consent. Counselors who were employed at the agency were eligible if they had individual patient caseloads and no plans to leave in the next two years.

Recruitment targets were based on analysis indicating that having 65 counselors would provide power of .80 (p < .05) to detect time-point X experimental condition interaction effects midway between low

and medium magnitude ($f = .18$). Study flow is shown in Fig. 2. Overall, 90 counselors screened, 69 consented to participate, and 61 of those were randomized. At study initiation 46 counselors consented to participate (recruited July – September 2015). A second cohort of 22 counselors was recruited 10 months later. One additional counselor was added at an OTP site five months later. Of the 69 consenting, 3 completed a baseline assessment but withdrew prior to randomization, and 5 did not complete a baseline assessment and were never randomized. All 61 remaining completed online surveys at baseline, 60 at post-training, and 60 at 3-month follow-up. Sixty-one counselors completed Standardized Patient (SP) interviews at baseline, 61 at post-training, and 59 at 3-month follow-up.

Counselors were randomized to training condition using a stratified (by site and training cohort), simple randomization approach (Hedden et al., 2006). For each counselor cohort, and within each site, a set of unlabeled sealed envelopes was created by the university-based research coordinator that contained equal numbers of Basic vs. Enhanced assignments matching the total number of counselors consenting at that site. These were distributed by the site-based research coordinator, opened, and recorded at the end of Basic Training. Counselors assigned to "Basic" received no further training.

2.2. Measures

Counselor assessments included an online survey in Qualtrics (Qualtrics, 2015) and a recorded, in-person SP interview, both of which were completed at baseline, post-training, and 3-month follow-up. Counselors received remuneration of $30, $35, and $40, respectively, at
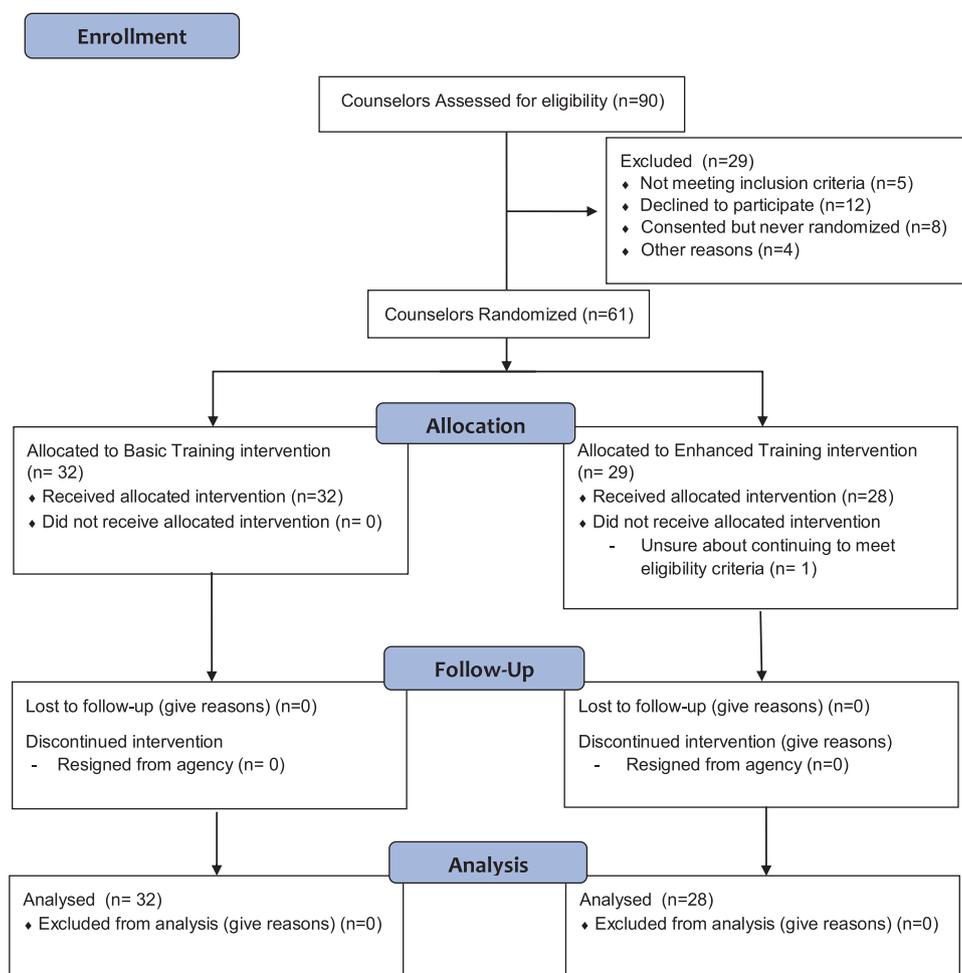

Fig. 2. Consort Diagram.

each time point. These amounts were approved during Human Subjects review and considered by the agencies to be consistent with expectations for research participation.

The demographic questionnaire assessed age, gender, race and ethnicity, education, years at the agency, and chemical dependency counselor credentialing.

Counselors' HIV knowledge was assessed via the 18-item *HIV Knowledge Questionnaire* (HIV-KQ-18: Carey and Schroder, 2002). Items like "having sex with more than one partner can increase a person's chance of being infected with HIV" are answered True/False/Don't Know with a total score range of zero to 18, computed for analyses as percent incorrect (Don't Know is scored incorrect).

Sixteen of the original 19 items of the *Sexual Intervention Self-Efficacy Scale (SISE;* Miller and Byers, 2008) were used to assess 3 domains: Comfort/Bias Self-Efficacy (e.g., I will be able to treat clients with sexual problems even when I don't necessarily agree with their decisions/actions.), Skill Self-Efficacy (e.g., I'm unfamiliar with the techniques used to intervene with individuals who have sexual concerns/problems.), and Confidence in Ability to Relay Accurate Information (e.g., I'm confident that I can relay accurate information to clients about: sexual orientation/identity issues). Because willingness to discuss sex-related issues with patients was important to the study's aims, 3 of 4 items from Miller and Byers' (2008, 2012) Willingness to Treat Sexual Issues Scale were included (e.g., If a couple told me that they were having a sexual problem I would refer them to another clinician). Counselors responded on a 6-point scale ("Strongly Disagree" to "Strongly Agree"). Higher scores indicate greater self-efficacy, and the mean of all items was used in analyses.

Standardized Patient Interview. To evaluate counselors' skills in talking about sex with patients, a 20-minute face-to-face SP Interview was used. SP interviews provide reliable stimuli for counseling skill assessment and fewer problems with missing data, common in clinical work sample requests (Baer et al., 2004). SP interviews also provide more reliable estimates of skill levels and skills gains compared to recordings of actual clinical interviews (Imel et al., 2014). Trained actors portrayed a patient in a mock individual counseling session. The same two middle-aged white male actors conducted all SP interviews. We matched the actors to each other on age, gender and race to minimize potential differences in counselor response based on any of these SP characteristics. Five of 184 SP sessions were conducted via phone. Counselors received written instructions containing interview expectations, a short history of the SP's character, and an abbreviated form of the PFR matched to the SP's scripted character. SP interviews were recorded and coded.

2.3. Counselor training

Study investigators (MHM, RH, TM, EW) trained groups of counselors on site. Two co-facilitated training for the first cohort of counselors, and (to streamline logistics) one facilitated each second-cohort session. Delivery method and content otherwise remained unchanged. Exposure to all training sessions was strongly encouraged; counselors who missed an in-person session viewed slides with audio and discussed them with investigators. The counselor recruited after the second cohort viewed slides with audio and met with the site coach to address questions. After Basic training (a 2-hour single session), all counselors were randomly assigned either to Enhanced training (additional 8-hour workshop, divided into 4 sessions, plus monthly coaching) or to Basic training alone (no additional training or coaching). Counselors received Continuing Education (CE) certificates as remuneration for training hours. Those assigned to Basic Training were eligible to receive the Enhanced training sessions, and CE credit for that training, after the last patients completed follow-up at the sites.

2.3.1. Basic training

Length and content differed from that of Enhanced Training. In a single, two-hour session, study design, rationale for addressing sex in SUD treatment, and an introduction to the patient PFR, were presented didactically. Counselors were reminded that sex is a personal and potentially sensitive topic. In the training, questions and discussion were encouraged but no skill-training occurred. Trainers oriented counselors to each PFR section but avoided teaching them how to present feedback to patients, instead emphasizing use of basic counseling skills. Training about the PFR anticipated that counselors in both the Basic and Enhanced conditions would have patients randomly assigned to receive or not receive a PFR. If a patient was randomized to receive a PFR, his or her counselor received it too. In the event that a patient or the counselor wanted to discuss the PFR, counselors needed to understand what the PFR contained.

2.3.2. Enhanced training

Four two-hour additional sessions took place at weekly intervals. Session one, *Discussing Sexuality-Related Issues with Patients: Why and How*, trained counselors to provide specific information (e.g., HIV prevention strategies, substance use-risky sex link). This module drew from established work on teaching health care providers to talk to patients about sexual health (Potter, 2014) and presented the PLISSIT model (Permission, Limited Information, Specific Suggestions, Intensive Therapy; Annon, 1976) to determine appropriate level of intervention. Counselors learned about associations between sexual behavior, substance use, relationships, and relapse, and skills to teach patients safer sex (condom use). The possible impact of sexual diversity (e.g., sexual orientation, gender identity, partner choices) on discussions with patients was also presented. Session Two, *Using Motivational Interviewing to Inform Conversations about Sexual Risk in SUD Treatment*, was limited to MI-consistent strategies for feedback provision. It reviewed the definition of MI and MI techniques for providing feedback using a PFR (Drapkin et al., 2016), and gave counselors practice in MI skills by role-playing reviewing a PFR with a patient. It was not intended to address all concepts and techniques of MI. Session Three, *SODAS: Teaching your Patients Decision-Making Skills for Sexual Situations*, taught a decision-making skill (SODAS; Stop, Options, Decide, Action, Self-Praise) previously used in effective sexual risk reduction interventions in SUD treatment (e.g., Tross et al., 2008). Session four, *Talk Tools: Teaching your Patients Communication Skills for Sexual Situations*, taught a communication skill also used in previous effective sex-risk reduction interventions for SUD patients (Calsyn et al., 2009, 2013).

2.4. Coaching

To facilitate sustainability of the enhanced intervention, coaches were selected by site administrators from existing agency personnel. Senior or supervisory clinicians deemed by administrators to have the needed skills and comfort with the topic were nominated. Coaches received additional pay or reduced workload. They attended trainings (Basic and Enhanced) with counselors and received one hour of additional training on coach responsibilities. Coaches were not research participants, and their patients were ineligible for the study. In one program, when the existing coach was unable to continue, the Research Coordinator (a Masters-level Social Worker) assumed the role.

Once patient recruitment began, Enhanced counselors received group coaching every other week for the first three months in which their patients were recruited and monthly thereafter until all patients recruited at the site had completed 6-month follow-up interviews. Due to difficulties encountered in starting patient recruitment, Enhanced counselors recruited in the first cohort did not begin receiving coaching until after they had already completed the 3-month assessment reported in this manuscript. Patient recruitment was already underway at the sites at the time the second cohort was recruited. These counselors began receiving coaching after training completion, and received 1–3 sessions prior to their 3-month assessment. Coaching was designed as face-to-face groups lasting 30–60 minutes, though telephone or video

contact was an acceptable substitute. A member of the investigative team attended each coach's first two sessions via phone and provided feedback. Subsequent sessions were audio-recorded and reviewed by investigators for ongoing feedback to coaches.

Coaches used a checklist for session structure: acknowledgment for participating; a "check-in" for counselors to report talking with patients about sex; discussing patients' PFRs with them, using SODAS, or TALK communications tools; and a commitment to an action before the next meeting.

2.5. SP coding

A coding scale was developed by the research team based on the MD3 SBIRT Coding Scale (DiClemente et al., 2015) and modified for sexual risk intervention. Three coders (undergraduate, recent college graduate, graduate student), supervised by JB, rated recordings to assess if counselors provided accurate information on sexual topics, used Motivational Interviewing techniques, and taught safe sex negotiation skills consistent with those provided in the counselor training. Coders were blind to counselor condition and visit date (baseline, post-training, 3-month).

The SP Coding Guide included 19 counselor behaviors considered to be adherent or non-adherent to principles presented in the Basic and Enhanced trainings. Following DiClemente et al. (2015), for each Adherent Behavior the SP interaction received "0" if the behavior was absent, "1" if it was present or attempted but sparingly or insufficiently demonstrated, and "2" if it was present and met or exceeded expectations for talking about sexual risk. For SODAS and TALKS tools, a score of 1 was assigned if the counselor named the skills (SODAS or TALK, respectively) or mentioned at least one of the four steps in the skill; a score of 2 was assigned if the counselor mentioned 2 + steps. Coding guidelines explained expectations for each behavior and gave examples. Ten of 19 items failed to achieve adequate interrater coding agreement (ICCs < 0.60). The 10 items reflecting low coder agreement tended to be those codes which were rarely used by counselors. To minimize error associated with multiple tests while also evaluating specific training goals, we selected from the codes based on interrater reliability (ICC ≥ .60) and relevance to, and coverage of, Enhanced training content. The six behaviors analyzed were, from Session 1, *requests permission to talk about sexual issue/feedback report* (ICC = .73); from Session 2, *elicits SP response to feedback* (ICC = .80), *gives SP time to talk* (ICC = .73), and *listens to SP using reflection* (ICC = .60); from Session 3, *uses SODAS in discussing sex with SP* (ICC = 1.0); and, from Session 4, *uses TALK tools in discussing sex with SP* (ICC = 1.0).

2.6. Analytic approach

Generalized Estimating Equations (GEE) were conducted, with training, time, and their interaction as predictors of counselor outcomes. We chose GEE, a regression-based procedure, to handle the repeated measurements over time for each counselor (Hedeker and Gibbons, 2006). GEE was well suited for that purpose and had other strengths, particularly allowing specification of correlation structures best fitting the data, and capability to correctly analyze outcomes of varying distributions. All analyses included age as a control predictor since training condition groups differed significantly on age. Additionally, we included employment site as a fixed effect predictor so that analyses could account for the clustering of counselors within agency sites (Snijders and Bosker, 2012). Outcomes were knowledge (HIV Knowledge), self-efficacy discussing sex-related issues with patients (SISE), and four of the skills measured with SP interviews (Permission, Elicitation, Time to Talk, Reflection). A 2-dependent correlation structure showed good fit to the data so was used in the GEE models. Following these central analyses, we carried out supplementary analyses to assess whether the cohort differences in when coaching started might have affected the results. These were conducted cross-

sectionally at posttest and at follow-up due to the complexity of the models, and included as predictors counselor cohort (first or second) and its interaction with training condition to test whether cohort moderated the effects of training. Two other skill training outcomes from SP interviews (likelihood of using SODAS and TALK) occurred infrequently for counselors in the Basic condition at follow-ups. Hence, these outcomes were dichotomized and – because they did not occur for any counselors at baseline – modeled cross-sectionally at posttest and at follow-up. Based on the distributions of outcome variables observed in preliminary analysis, self-efficacy was modeled with a linear model (Cohen et al., 2003); Permission, Elicitation, and Knowledge with a negative binomial model; Time to Talk and Reflection with an ordinal logistic model (Long, 1997); and SODAS and TALK with a linear probability model (Aldrich and Nelson, 1984).

3. Results

3.1. Preliminary analyses

Counselors (*N* = 61) were 77% female and 23% male, aged 24–69 years (*M* = 40.37, *SD* = 12.96). The majority (80%) identified as white, 7% Black/African American, 7% multiracial; 6% did not answer. Additionally, 7% of counselors identified as Latino. The modal level of education was a Master's degree (52.5%), with 18% reporting an Associate's degree, 26.2% having a Bachelor's degree, and 3.3% with some other level of education. The majority (68.9%) were certified to provide SUD counseling in their state. Among the 61 randomized, the number of months providing patient care averaged 87.65 (SD = 108.53), and number of months working at the study site averaged 32.19 (SD = 65.08).

Counselors were assigned at study onset to Basic (n = 32) or Enhanced (n = 29) training. One counselor assigned to Enhanced training was dropped due to a change in eligibility. These 60 (32 Basic and 28 Enhanced) counselors were the analysis sample; due to intensive follow up, all 60 provided data at both follow up points and there were no missing data. Counselors were compared at baseline on demographic characteristics and all dependent variables. Groups differed only in age (*t* = -2.36, *p* = 0.02), with Enhanced counselors (*M* = 44.48, *SD* = 13.47) on average being older than Basic peers (*M* = 36.67, *SD* = 11.48).

3.2. Central analyses

3.2.1. HIV knowledge

Level of HIV knowledge in both training groups and across time points was high, with Basic and Enhanced counselors answering, on average, 10–15% of questions incorrectly. No effects of counselor training over time were detected (Table 1).

3.2.2. Self-efficacy

A significant Time effect indicates that counselors across both Basic and Enhanced conditions improved self-efficacy to discuss sexual issues with patients (Table 1). Additionally, a significant Training by Time interaction showed that Enhanced counselors improved more than Basic counselors. Pairwise tests indicated that Enhanced counselors showed improvements from baseline, and differed from Basic counselors at follow-ups. Specifically, Enhanced counselors' self-efficacy scores at baseline were significantly different from their scores at post-test (z = 5.85, p < 0.01) and at follow-up (z = 5.41, p < 0.001), and from those of Basic counselors at follow-up (z = 2.13, p < 0.05).

3.2.3. Skills

A significant Training X Time interaction showed superior improvements in Enhanced counselors compared to Basic counselors in use of Reflection with SPs (Table 1). While Basic counselors scored higher initially, their scores declined over time, whereas those of

Table 1
Estimated marginal means by training group (Basic n = 32, Enhanced n = 28) on outcome variables from Generalized Estimating Equation (GEE) models testing effects of counselor training over time (controlling for site and age).

Outcome	Timepoint			Type III Chi-square (df)		
	Baseline Mean (SE)	Posttest Mean (SE)	Follow-up Mean (SE)	Training	Time	Training x Time
Knowledge						
HIV knowledge (# wrong)				0.46 (1)	1.22 (2)	2.62 (2)
Basic training	1.95 (0.44)	2.01 (0.46)	1.81 (0.42)			
Enhanced training	2.52 (0.57)	1.73 (0.41)	2.61 (0.58)			
Cohen's d	*+.21*	*−.12*	*+.29*			
Self-Efficacy						
SISE total (1-6)				1.98 (1)	41.30 (2)***	9.29 (2)*
Basic training	4.15 (0.11)	4.29 (0.11)	4.41 (0.11)			
Enhanced training	4.14 (0.11)	4.62 (0.11)	4.66 (0.11)			
Cohen's d	*−.02*	*+.55*	*+.41*			
Skills						
Permission (0-2)				6.39 (1)*	2.16 (2)	3.24 (2)
Basic training	0.65 (0.16)	0.43 (0.16)	0.24 (0.16)			
Enhanced training	0.69 (0.16)	0.90 (0.16)	0.74 (0.17)			
Cohen's d	*+.05*	*+.54*	*+.55*			
Elicitation (0-2)				0.69 (1)	6.83 (2)*	0.56 (2)
Basic training	1.12 (0.15)	1.49 (0.15)	1.43 (0.15)			
Enhanced training	1.44 (0.16)	1.62 (0.16)	1.41 (0.16)			
Cohen's d	*+.38*	*+.15*	*−.02*			
Time to talk (0-2)				0.19 (1)	1.10 (2)	1.01 (2)
Basic training	1.88 (0.06)	1.88 (0.06)	1.88 (0.06)			
Enhanced training	1.83 (0.07)	1.76 (0.07)	1.90 (0.07)			
Cohen's d	*−.14*	*−.34*	*+.06*			
Reflection (0-2)				1.18 (1)	1.01 (2)	6.80 (2)*
Basic training	1.35 (0.15)	1.22 (0.15)	1.10 (0.15)			
Enhanced training	1.18 (0.15)	1.53 (0.15)	1.47 (0.16)			
Cohen's d	*−.21*	*+.31*	*.37*			

Note: Standard interpretation of the effect size measure Cohen's d is 0.20 = a small difference, 0.50 medium, and 0.80 large. A positive Cohen's *d* indicates that mean scores were higher for enhanced training counselors; a negative *d* that they were lower.

** p < 0.01.
 * p < 0.05.
*** p < 0.001.

Enhanced counselors improved. Pairwise tests indicated that the significant Training X Time interaction was accounted for by Enhanced counselors increasing use of reflection from baseline to post-training (z = 2.06, p < 0.05). No Training X Time interaction was found for the other SP interview codes, Giving Permission, use of Elicitation, and giving Time to Talk. A Training effect for Permission indicates the groups differed, overall, in the degree to which they gave Permission to talk about sex. While Enhanced counselors used more of this skill at follow-ups, the Training X Time effect was nonsignificant in this skill, which was the lowest occurring of all the skills. The Time effect for Elicitation indicates change in this skill over time across both training groups.

Based on GzLM models (Table 2) controlling for site, age, and the interaction between training condition and counselor cohort, Enhanced counselors were significantly more likely than Basic counselors to discuss the SODAS decision-making strategy with SPs at post-test and to discuss the TALK communication strategy with SPs at both post-test and follow-up. Odds ratios in Table 2 represent the odds of Enhanced versus Basic condition counselors using the skill with the SP. For example, Enhanced condition counselors' odds of discussing SODAS in their post-test SP interview were 13.91 times greater than Basic condition counselors.

3.2.4. Supplementary analyses

In supplementary analyses, we found no significant effects of counselor cohort, or its interaction with training condition (Basic vs. Enhanced), on HIV Knowledge, Self-efficacy, or the skills of Permission, Elicitation, Time to talk, or Reflection. Similarly, we found no effects of counselor cohort, or its interaction with training condition, on use of TALK or SODAS. These results suggest that cohort differences would not

Table 2
Estimated probability of counselors discussing SODAS (decision-making) and TALK (communication) techniques at each timepoint from GzLM models testing effects of counselor training (Basic n = 32, Enhanced n = 28; controlling for site, age, and the interaction between training condition and counselor cohort,).

Outcome	Training condition		Odds ratio	Type III Chi-square (df)
	Basic % (SE)	Enhanced % (SE)		Training effect
Skills				
SODAS				
Posttest	2 (0.06)	25 (0.06)	13.91	7.81 (1)**
Follow-up	2 (0.04)	12 (0.05)	7.47	2.87 (1)
TALK				
Posttest	2 (0.07)	25 (0.07)	15.41	6.72 (1)*
Follow-up	3 (0.07)	27 (0.07)	12.12	6.40 (1)*

Notes: Training conditions did not differ on SODAS or TALK skills at baseline, with 0% using these techniques in both groups.
GzLM stands for Generalized Linear Model. Percentages are the predicted probability of discussing SODAS or TALK as estimated from GzLM models.
*** p < 0.001.
 * p < 0.05.
** p < 0.01.

have altered the above-reported central analyses.

4. Discussion

The purpose of this study was to develop and test an HIV risk reduction training intervention tailored for SUD counselors. The study

sought not to compare different training methods nor to equate training intensity across conditions, but to examine whether a more intensive skill- and motivation-based training provides added benefit to what is gained from a short information-based training. Results showed that Enhanced training plus coaching increased counselors' skill and self-efficacy to discuss sex with patients as part of SUD treatment, compared with those receiving shorter information-based training.

Anecdotal evidence (Haynes et al., 2008) suggests that many treatment providers do not feel competent or comfortable assessing and discussing sexual risk with patients, which suggests they are unlikely to engage in these crucial conversations that are relevant to relapse prevention and recovery. Our findings suggest counselor self-efficacy can be improved with workshop training, and that it is feasible to recruit SUD counselors to attend such trainings. The effects for Self-Efficacy were medium at post-training and small to medium at follow-up. Whether such changes are sufficient to improve patient outcomes is yet to be seen.

Focusing the training on specific attitudes and skills is likely important. Counselor-demonstrated skills (use of Reflection in talking with a patient about sex, SODAS decision-making, TALK communication tools) were improved with Enhanced training. Notably, all three skill improvements persisted at 3 month follow-up. The effect for the Motivational Interviewing skill of Reflection was small. Effects for the decision-making skill, SODAS, and the communication skill, TALK were large. Although it may seem self-evident that counselors who received no training in a skill, like TALK, would fail to demonstrate it in a standardized patient situation, it is not always the case that brief exposure to a counseling skill in a workshop like those provided in this study results in a counselor's ability to demonstrate use of the skill at a later point. Prior clinician training studies have achieved initial skill improvements but have demonstrated difficulty in maintaining skill gains. This included both medical provider training on discussing sex with patients (Bradley-Springer et al., 2006; Dodge et al., 2001) and SUD counselor training in skills such as Motivational Interviewing (Baer et al., 2009; Carroll et al., 2000; Cohen et al., 1994 Gerbert et al., 2003; Miller et al., 2004). Yet, some studies of training medical providers reported sustained (12-month) effects (Kelly et al., 2000; Patel et al., 2012; Thrun et al., 2009). For many complex therapeutic skills, workshop or massed training models have been de-emphasized in favor of multifaceted training and follow-up organizational support based on models of implementation science (See Miller and Rollnick, 2013, Chapter 24; Fixsen et al., 2005). Therefore, we added a coaching component to enhance and sustain workshop effects. Our data suggest that 8 h of workshop training, for SUD clinicians who already are HIV knowledgeable, can result in real and short-term skills-based improvements in HIV intervention skills. An important next step would be to assess the durability of these skills improvements via a longer-term follow-up such as 12-months.

An important consideration in any counselor training effort is the cost involved. The training curriculum tested in this study involved 2 or 10 h for each counselor, which represents a time and financial burden for the trainer, counselors, and agency. Although a 10-hour Enhanced training may be unfeasible for many treatment programs given that counselors typically feel over-worked and under-paid, the benefit of leveraging existing relationships between counselors and patients is significant. Regular visits, frequent conversations, and associated trust are features of this treatment relationship that collectively can facilitate risk reduction by efficiently using an existing schedule of contacts and an agenda of behavioral change. The decision by a treatment agency to invest in training of this intensity requires balancing workload requirements for staff with the ultimate potential benefit for patients.

Although counselors in this study demonstrated consistently high HIV knowledge across time, possibly because their agencies already offered some basic HIV education programming, this finding may not generalize to other U.S. SUD treatment programs (Satterwhite et al., 2013). Therefore efforts to increase counselors' knowledge of HIV

remain worthwhile in most settings.

4.1. Limitations

Several limitations are worth noting. SP data are a reliable measure of SUD counselors' ability to enact skills with another person, but these data do not reflect actual implementation of skills in day-to-day clinical work. It was beyond the scope of this study to conduct observations and analysis of actual counselor-patient interactions..

For this report, we did not analyze all potential aspects of SP interviews. The SP coding process revealed some codes for which interrater reliability was difficult to achieve. Hence, this report was limited to those SP items with good reliability and greatest relevance to the training. Some of the SP codes' low interrater reliability reflected that we altered the DiClemente et al. (2015) coding scheme considerably to reflect the context and skills addressed in our training. Because of this, a number of codes were new, untested, and had low base rates (particularly at baseline).

Generalizability of the results of this study is limited, as the sample was drawn from one geographic region of the U.S. However, inclusion of counselors from two different treatment modalities and four sites across three cities provides greater external validity than would a single site study. Enrollment of a high percentage of eligible counselors suggests good representation of the participating sites. Two aspects of the study design are worth noting: first, the lack of an evaluation of the degree to which counselors did adhere, or intended to adhere, to the training and use of the PFRs is a limitation, though not a design flaw. Because the intervention was the training itself, rather than a mandatory curriculum targeting patients, the study did not include fidelity and adherence monitoring. Second, the lack of longer follow-up limits conclusions about the longevity of our findings. Whether counselors will retain these skills over a longer period of months or years is important but unknown based on the scope of this study. However, because counselor attrition in SUD treatment can be significant (Hatch-Maillette et al., 2019) it may be advantageous and most accurate to assess skill retention when counselors are most likely to still be in the setting in which they acquired these skills and are using them. This study's relatively small sample size and coaching beginning at different times for cohort 1 and cohort 2 counselors can be understood in the context of effectiveness research—the sample of 61 counselors was substantial in comparison to the literature on training of substance use treatment counselors. And while the variation in coaching start was unintended, it exemplifies the difficulties of conducting effectiveness research in field settings. Finally, as with many training interventions in healthcare settings, an inherent limitation is the associated cost to the agency. This must be balanced against the benefit gained from a workforce prepared to take advantage of opportunities for tailored HIV prevention in the context of SUD treatment, thereby improving the quality of care delivered and providing a public health service.

4.2. Conclusion

HIV transmission is largely driven by sexual risk behavior and in many cases is intertwined with substance use. It is imperative to find mechanisms for risk reduction messaging in places where such individuals seek care. SUD treatment staff are ideally positioned to intervene with their patients' sexual risk behavior because they may be a key health care professional for their patients. In addition, because their main focus is substance use, they are uniquely placed to assess whether a patient's relationships or sexual behavior pose a risk of substance use relapse. Potential beneficial outcomes of such intervention include reductions in transmission of STIs, HIV, and HCV, unwanted pregnancy, and relapse to substance use. The current study indicates feasibility, through workshop training, of improving sexual-behavior-related counselor self-efficacy and skills, at least in the short term. These findings may be useful in designing both initial counselor education

programs as well as continuing education.

Contributors

MHM, EW and JB designed the study, conducted literature searches, drafted and the prepared the manuscript. RH led early manuscript drafts. JB, MHM and RH trained and supervised the coding team. RH and LW oversaw the study operations. MHM, EW, RH and TW conducted counselor trainings, and TW and BB conducted the statistical analyses. AR coded counselor interviews. KC, MP, KW and KD managed counselor data collection and site participation. All authors contributed to editing and review of the manuscript and have approved the final version.

Role of funding source

Data statement

Due to the sensitive nature of the questions asked in this study, survey respondents were assured raw data would remain confidential and would not be shared.

Data not available. The data that has been used is confidential.

Conflict of interest

No conflicts declared.

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