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A quantitative statistical analysis of the efficacy and outcomes of certified peer recovery coaches engaging people with substance use disorders in a harm reduction program

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Abstract
People who inject drugs (PWID) are at high risk for infectious diseases including hepatitis C, hepatitis B, HIV, and endocarditis. Harm reduction programs (HRP) are effective interventions to reduce the burden of infectious diseases in PWID, and are also an effective conduit for providing evidence-based recovery coaching services that can lead to desired outcomes. Recovery Coaches are able to bridge HRP clients to definitive services such as Medication Assisted Treatment (MAT), detoxification, inpatient residential treatment, and outpatient counseling. The demographics, clinical characteristics, and infectious disease surveillance modalities utilized by HRPs have been described before by others. In our study we attempted to quantify evidence-based peer recovery coaching interventions and their efficacy in affecting change in participants of a West Virginia HRP. Peer-Recovery coaching interventions were found to be effective in bringing about positive change in PWID participants in a HRP.

Keywords: opioids, addiction, coaching, harm, reduction

Introduction
Certified Peer-Recovery Coaches (PRC) embedded in a HRP collected demographic data and quantified evidence-based interventions utilized with participants of the program. Additionally over the course of 12 months, outcomes for these individuals were evaluated as a function of the evidence- based interventions and non-evidence-based interventions. Although demographics of HRP participants and programs and services offered to clients has been described before by others (Ashford, *et al*, 2018) [1], there is a paucity of published research on what actually works, and the effect of gender on PRC interventions. Additionally, there is no published research on the self-efficacy of PRCs working in Harm Reduction Programs. Our study attempted to quantify these measures.

Material and Methods
Participants of the HRP were given the option of speaking with a PRC during their visit for syringe exchanges. Those individuals who chose to speak with the PRC were offered a variety of definitive treatment options including linkage to medication assisted treatment, linkage to detoxification services, linkage to residential inpatient treatment, and linkages to outpatient counseling services.
The PRCs utilized a variety of evidence-based and non-evidence based interventions to attempt to bring about change in the participants of the HRP.

Outcomes measured included
1. Did the person agree to decrease usage
2. Did the person agree to go to detox
3. Did the person agree to meet with the PRC again
4. Did the person agree to medication assisted treatment
5. Did the person agree to counseling
6. Did the person agree to attend a 12 step meeting

Evidence-Based Interventions utilized by the PRCs included

1. Screening Brief Intervention and Referral to Treatment (SBIRT)
2. Motivational Interviewing (MI)
3. The use of open-ended questions (OQ)
4. The use of positive affirmations (AFF)
5. The use of reflective listening (RL)
6. The use of summarization (Sum)

Non-Evidence-Based Interventions utilized by the PRCs Included

1. Self-disclosure of personal recovery status (Self-D)
2. Faith-Based interventions such as prayer (Faith-B)

Self-Efficacy parameters of the PRCs in this setting were evaluated quarterly including

1. How much autonomy do you have in your role as a PRC?
2. To have supported you feel by the Berkeley County recovery resource center staff?
3. How supported the field by the law enforcement?
4. How supported you feel by the Berkeley County health department staff?
5. How satisfied are you with your work as a PRC?
6. How often do you feel burnout?

Results

Our study sample had 203 participants of those participants 51.2% were male and 48.8% were female.

Table 1: Evidence-Based Recovery coaching interventions

	Female			Male		
	yes	no	Total	yes	no	Total
SBIRT	66	33	99	78	26	104
MI	95	4	99	103	1	104
OQ	96	3	99	103	1	104
AFF	92	7	99	100	4	104
RL	99	0	99	103	1	104
Sum	91	8	99	99	5	104

The most common evidence-based interventions utilized by the Recovery Coaches in the program were Reflective listening (RL), Open-ended questions (OQ), Motivational Interviewing (MI), Positive Affirmations (AFF), Summarizations (Sum) and Screening, Brief Interventions and referral to Treatment (SBIRT). See table 1.

All evidence-based interventions had a positive effect, as the percent of utilization with clients exceeded 50%.

Table 2: Non Evidence-Based interventions

	Female			Male		
	yes	no	Total	yes	no	Total
Self -Disclosure	86	13	99	100	4	104
FAITH B	5	94	99	5	99	104

For Non-evidence-based interventions the most common methods utilized by the recovery coaches included self-disclosure of recovery status, and Faith-based interventions.

Self-disclosure of recovery status had a positive effect. See table 2.

Table 3: Participant Outcomes

	Female			Male		
	yes	no	Total	yes	no	Total
DecreaseUsage	42	57	99	31	73	104
DETOX	14	85	99	11	93	104
SEC. MEETING	94	5	99	96	8	104
MAT	10	89	99	11	93	104
COUNSEL	4	95	99	11	93	104
12 STEP	11	88	99	15	89	104

Participant outcomes demonstrated that agreeing to a second meeting (SEC. Meeting) had the highest value for both male and female participants, followed by Decrease Usage, Detox, agreeing to 12 step meetings (12 STEP), Medication Assisted Treatment (MAT) and agreeing to participate in substance use counseling (Counsel). The intervention with the highest positive effect was agreeing to a second meeting with the recovery coach. See table 3.

Discussion

From our results it is clear that for both male and female participants the most effective evidence-based interventions were Reflective listening with 100% for Female and 99.04% for male participants. This was followed by Open-ended questions, Motivational Interviewing, and finally Positive-Affirmations and Summarizations.

Data Analysis

For outcomes, we demonstrated that SEC. MEETING was the most effective for both male and female participants with 94.95% for female and 92.31% for males, followed by Decrease Usage and DETOX. The efficacy of these interventions was higher for females than for males.

Agreeing to attend 12 STEP meetings followed by MAT and Counseling had a higher efficacy for males compared to females (14.42%, 10.58% and 10.58% for male versus 11.11%, 10.10% and 4.04% for female).

Was there any Relationship between Gender and Evidence-Based Interventions. We utilized the chi-square test for independence to discover if there was any the relationship between Gender and each component of the panel of evidence-based interventions.

In applying the "Pearson Chi-Square**"** test to this data-set we demonstrated that for all Evidence-Based Interventions there was no statistically meaningful relationship between client gender and the interventions used. See table 4.

Table 4

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	5,699[a]	1	0,017
Continuity Correction[b]	4,553	1	0,033
Likelihood Ratio	5,948	1	0,015
N of Valid Cases	203		

Self-Efficacy Surveys of the Recovery Coaches

The Self-Efficacy surveys of the recovery coaches working in the Harm Reduction Program were analyzed to discern overall themes.

Our sample consists of 12 respondents, and all of them answered "5 (much)" in the question about how much autonomy they perceive in their role as a PRC. All respondents, felt supported by the Recovery Resource

Center Staff. 7 or 58.3% felt poorly supported by Law Enforcement and 5 or 41.7% felt some support by Law Enforcement. One respondent felt intermediate support by Health Department staff and 11 felt significant support by Health Department staff.10 or 83.3% of respondents did not report burn out, and just 2 or 16.7% felt burn- out.

Conclusion

We describe our findings from Peer Recovery Coaches embedded in a Harm Reduction Program in West Virginia. Our study had 203 participants, with more than half being male, and the majority were white (88.2%) with a mean age of 33.57.

Our results demonstrate that, for evidence-based recovery coaching interventions, all components utilized had a positive effect including Reflective Listening, Open-ended Questions, Summarizations, Motivational Interviewing, and Screening, Brief Intervention and Referral to Treatment (SBIRT). All interventions had a higher utilization rate in males with the exception of Reflective Listening which was utilized more in females (100% for female and 99.04% for male).

For non-evidence-based interventions, Faith-based interventions had minimal utilization by the recovery coaches. Self-disclosure of recovery status was well utilized and was more effective in female participants.

Our outcomes demonstrated the highest yield in terms of participants agreeing to a second meeting with the recovery coaches, followed by agreeing to decrease usage. Other outcomes including agreeing to go to detox, counseling, or 12-step mutual support meetings were not statistically significant.

When examining the dependence between Gender and evidence-based interventions, all components are independent, which means the method of evidence-based interventions utilized by the recovery coaches were not related to Gender.

For the dependence between Gender and non-evidence-based interventions, self-disclosure of recovery status was utilized more by the recovery coaches with female participants than with males.

Our analysis of Self-Efficacy surveys from the recovery coaches demonstrated a high-level of perceived support and fulfillment and a low-level of burn-out.

We believe our study is important because this is the first time that a quantitative analysis of the efficacy and outcomes of peer recovery coaching interventions with substance use disorder clients in a Harm-Reduction program has been described. We believe our findings can be utilized to further develop best-practices in engaging Harm Reduction Participants with substance use disorders in an effort to optimize outcomes.

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