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Interest in use of mHealth technology in HIV prevention and associated factors among high-risk drug users enrolled in methadone maintenance program

Roman Shrestha^a, Pramila Karki^b, and Michael Copenhaver^b

^aDepartment of Community Medicine and Health Care, University of Connecticut Health Center, Farmington, USA

^bDepartment of Allied Health Sciences, University of Connecticut, Storrs, USA

Abstract

The adoption of mobile technologies for health (mHealth) in healthcare has grown considerably in recent years, but systematic assessment of interest in the use of mHealth in HIV prevention efforts among people who use drugs (PWUD) is lacking. We therefore examined interest in use of mHealth technology in HIV prevention and associated individual-level factors among high-risk PWUD enrolled in methadone maintenance program. A total of 400 HIV-negative PWUD, who reported drug- and/or sex-related risk behaviors completed a standardized assessment using audio computer assisted self-interview (ACASI). Results revealed significant interest in using mHealth-based approaches for specific purposes, including: to receive medication reminders (72.3%), to receive information about HIV risk reduction (65.8%), and to assess HIV risk behaviors (76.5%). Multivariate analysis showed that interest in receiving medication reminders was associated with currently taking medication and being neurocognitively impaired, whereas interest in receiving HIV-risk reduction information was associated with being non-white, married, and perceiving the person was at high-risk for contracting HIV. Similarly, participants' interested in using mHealth for HIV risk behavior assessment was associated with having recently visited a healthcare provider and exhibiting depressive symptoms. Overall, this study demonstrated that high-risk PWUD are interested in using mHealth-based tools as a key part of an HIV prevention approach within a common type of drug treatment settings. Thus, formative research on preferences for design and functionality of mHealth-based HIV prevention tools are now needed, followed by practical development, implementation, and evaluation of these new intervention strategies.

Keywords

mHealth technology; HIV prevention; substance abuse; people who use drugs; text messaging names

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Roman Shrestha; roman.shrestha@uconn.edu, 263 Farmington Avenue, Farmington, CT 06030-6235, USA.

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Introduction

People who use drugs (PWUD) are one of the most vulnerable groups for contracting HIV as a result of preventable HIV risk behaviors (Marshall et al., 2014; Strathdee et al., 2010). Prior research has further demonstrated that a disproportionate percentage of PWUD display a wide range of neurocognitive impairment (NCI), alcohol use disorders (AUDs), and depressive symptoms that may be disruptive to their participation in treatment services (Bates, Pawlak, Tonigan, & Buckman, 2006; Shrestha & Copenhaver, 2016; Shrestha, Huedo-Medina, & Copenhaver, 2015). Considerable efforts have been made to scale up evidence-based HIV prevention approaches to PWUD. The available evidence-based approaches, however, do not adequately address the unique needs of PWUD and, thus, have resulted in this high-risk population deriving less benefit from existing interventions (Huedo-Medina, Shrestha, & Copenhaver, 2016). Therefore, there is an urgent need to incorporate innovative tools to improve health-promoting behaviors and access to and utilization of healthcare among high-risk PWUD.

Over the past few decades, the adoption of mobile technologies throughout the US has grown considerably. With this growth, there has been mounting interest in the use of mobile technologies for health (mHealth) in healthcare (WHO, 2011). mHealth solutions have been shown to have a positive impact on medication adherence, appointment attendance, and health-promoting behaviors (Finitsis, Pellowski, & Johnson, 2014; Free et al., 2013). Additionally, growth in mHealth applications and steady reduction in costs of mobile devices have created the potential for mHealth to add significant value to treatment services, particularly within resource-limited settings.

Despite these promising trends, there is a dearth of evidence specific to the use of mHealth tools in HIV prevention among high-risk PWUD enrolled in common drug treatment settings such as methadone maintenance programs (MMP). Furthermore, no published data exists on the factors associated with interest in mHealth use. Thus, the goal of this study was to assess interest in use of mHealth technology for specific purposes to promote HIV prevention and the associated individual-level factors among high-risk PWUD in MMP.

Methods

Participants and procedures

A cross-sectional study was conducted between June and July 2016 within APT Foundation, which is a community-based MMP in Connecticut. The study sample included 400 high-risk PWUD who were 18 years, HIV-negative, reported drug- and/or sex-related HIV risk behaviors (past 6 months), met the DSM-V screening criteria for opioid use disorder, and were enrolled in MMP. Eligible participants were invited to provide informed consent, followed by the survey. Participants were reimbursed for their participation in the survey. This study was approved by the Institutional Review Board at the University of Connecticut and received board approval from the APT Foundation.

Measures

The primary outcomes were interest in mHealth-based approaches for specific purposes to promote HIV prevention, including: to receive medication reminders, to receive information about HIV risk reduction, and to assess HIV risk behaviors. In this context, participants were asked three items, which were measured on a 5-point Likert scale (ranging from 1=‘*not interested at all*’ to 5=‘*extremely interested*’) (Krishnan et al., 2014). These variables were further dichotomized as “*No*” (*not interested at all*) and “*Yes*” (*slightly interested, somewhat interested, moderately interested, and extremely interested*).

Covariates included were based on prior research. We assessed participants’ socio-demographic characteristics, health insurance status, visit to healthcare provider, homeless status, currently taking prescribed medication, self-perceived HIV risk, and satisfaction with current HIV prevention methods. Participants’ current HIV risk behaviors were assessed using an adapted version of the HIV risk-taking behavior scale (HRBS) (Ward, Darke, & Hall, 1990). NCI was measured using the Brief Inventory of Neurocognitive Impairment (BINI), which is a 54-item self-report measure of neuropsychological symptoms (Copenhaver et al., 2016). Depressive symptoms were assessed using the 20-item Center for Epidemiological Studies Depression (CES-D) Scale (Radloff, 1977). AUDs were measured using the validated 10-item Alcohol Use Disorders Identification Test (AUDIT) (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

Data analyses

Analyses were performed using SPSS 23.0 and criterion for statistical significance was $p < 0.05$. We computed descriptive statistics, including frequencies and percentages for categorical variables, and means and standard deviations for continuous variables. After conducting bivariate analyses for significant associations with the three primary outcomes, we conducted multivariate logistic regression analyses on bivariate associations found to be significant at $p < 0.10$. The final model was ultimately selected based on goodness-of-fit using the Hosmer and Lemeshow Test (Hosmer, Hosmer, Le Cessie, & Lemeshow, 1997).

Results

Interest in mHealth use for medication reminders

The majority of the participants (72.3%) expressed interest in using mHealth to receive medication reminders (Figure 1). While Table 1 shows the bivariate correlates of being interested to use mHealth for medication reminder, Table 2 shows the independent correlates of this outcome in multivariate modeling. Specifically, individuals who reported taking medication in the past 30 days ($aOR = 1.772$, $p = 0.037$) and were neurocognitively impaired ($aOR = 1.494$, $p = 0.048$) were significantly more likely to be interested in using mHealth to receive medication reminders.

Interest in mHealth use to receive HIV risk reduction information and to assess HIV risk behaviors

There was substantial interest among participants in using mHealth-based approaches to receive HIV risk reduction information (65.8%) and to assess HIV risk behaviors (76.5%)

(Figure 1). Though a number of factors were associated with interest in mHealth use for receiving HIV risk reduction information in bivariate analyses (Table 3), in the multivariate model, being white (aOR=0.536, $p=0.012$) and single (aOR=0.539, $p=0.042$) were associated with significantly less interest in the use of mHealth for receiving HIV risk reduction information. Additionally, those with high perceived risk (aOR=1.547, $p=0.035$) were significantly more likely to show interest in mHealth use to receive HIV risk reduction information (Table 4).

Regarding assessing HIV risk behaviors, participants who reported having visited a healthcare provider in the past 12 months (aOR=3.168, $p=0.044$) and had moderate to severe depression (aOR=3.149, $p=0.009$) were over three times more likely to show interest in using mHealth to be assessed for HIV risk behaviors (Table 4).

Discussion

The findings from this study indicated strong interest among high-risk PWUD in using mHealth-based tools to promote HIV prevention. These findings are comparable to those from prior studies with other risk populations (Finitis et al., 2014; Kim et al., 2015; Shrestha, Huedo-Medina, Altice, Krishnan, & Copenhaver, 2016). Consistent with previous findings, our sample further showed a high prevalence of HIV risk behaviors and NCI (Shrestha et al., 2017). It is important to note that individuals who were cognitively impaired and were currently taking medications showed a strong interest in mHealth services to receive medication reminders. This suggests that these individuals are not only concerned about their risk of HIV infection but also motivated to engage in treatment services (e.g., adherence) by using mHealth-based approaches. These findings, thus, support incorporating mHealth strategies as an additional tool to accommodate the negative impact that NCI may have on various aspects of HIV prevention.

Individuals who perceived themselves to be at higher risk of contracting HIV reported greater interest in mHealth use to receive HIV risk reduction information. It is possible that the presence of NCI, depressive symptoms, and AUDs independently and/or collectively may negatively impact their participation in HIV prevention (Anand, Springer, Copenhaver, & Altice, 2010). It may be that these individuals are making rational judgment about their risk levels when considering their interest to use mHealth strategies as a complementary approach to receive HIV risk reduction information. Overall, our findings suggest the need to consider how at-risk PWUD perceive and respond to their HIV risks as this may have a significant impact on incorporating mHealth strategies into existing HIV prevention approaches.

Individuals who had visited healthcare providers and who had moderate to severe depression were more likely to be interested in using mHealth in an HIV risk behavior assessment. These findings are comparable to those from prior studies with other risk groups in which mHealth-based tools have been used for monitoring behavioral outcomes, such as substance use, alcohol consumption, smoking, physical activity (Finitis et al., 2014; Heron & Smyth, 2010; Kim et al., 2015; Torous, Friedman, & Keshavan, 2014). While there appears to be broader interest in the use of mHealth-based approaches in assessing HIV risk behaviors,

important consideration must be given to ensure security, privacy, and ease of use during implementation of the intervention.

The results should be interpreted in light of a few limitations. First, this study relied solely on self-reported data and results may be subject to social desirability bias. Second, as with all cross-sectional studies, we are limited in our ability to infer causal relationships. Third, the measure used to assess NCI (BINI) has yet to be validated against a comprehensive neuropsychological testing battery. Fourth, the use of convenience samples from the MMP may have limited the generalizability of our findings.

Conclusions

This study demonstrated that high-risk PWUD are interested in using mHealth-based tools as an HIV prevention approach within a common type of drug treatment setting (e.g., MMP). Therefore, as enthusiasm grows with regard to using various mHealth strategies, formative research on preferences for design and functionality of mHealth-based HIV prevention are now needed, followed by development, implementation, and evaluation of these new intervention strategies.

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Figure 1.
Participants' interest in mHealth technology use

Table 1

Characteristics of participants and HIV risk behaviors, stratified by their interest in mHealth use to receive medication reminder ($N = 400$)

Variables	Entire Sample (N = 400)		Receive Medication Reminder		OR (95% CI)	p
	Frequency	%	Yes (N = 289)	No (N = 111)		
Characteristics of Participants						
Age: Mean (SD)	40.9 (11.1)		40.3 (10.5)	42.5 (12.3)	0.983 (0.963, 1.002)	0.079
Gender						
Male	234	58.5	162 (40.5)	72 (18.0)	-	-
Female	166	41.5	127 (31.8)	39 (9.8)	1.447 (0.919, 2.278)	0.110
Sexual Orientation						
Heterosexual or Straight	345	86.3	243 (60.8)	102 (25.5)	-	-
Homosexual, Gay, or Lesbian	16	4.0	11 (2.8)	5 (1.3)	0.923 (0.313, 2.725)	0.885
Bisexual	39	9.7	35 (8.8)	4 (1.0)	3.673 (1.272, 10.601)	0.016
Ethnicity						
Non-White	147	36.8	108 (27.0)	39 (9.8)	-	-
White	253	63.2	181 (45.3)	72 (18.0)	0.908 (0.575, 1.433)	0.678
Marital Status						
Married	83	20.8	64 (16.0)	19 (4.8)	-	-
Divorced	111	27.8	78 (19.5)	33 (8.3)	0.702 (0.365, 1.350)	0.288
Widowed	14	3.5	9 (2.3)	5 (1.3)	0.534 (0.160, 1.787)	0.309
Single	192	48.0	138 (34.5)	54 (13.5)	0.759 (0.416, 1.384)	0.368
High School Graduate						
No	107	26.8	70 (17.5)	37 (9.3)	-	-
Yes	293	73.3	219 (54.8)	74 (18.5)	1.564 (0.970, 2.522)	0.066
Employed						
No	331	82.8	241 (60.3)	90 (22.5)	-	-
Yes	69	17.3	48 (12.0)	21 (5.3)	0.854 (0.484, 1.505)	0.584
Income Level						
< \$10,000	312	78.0	222 (55.5)	90 (22.5)	-	-
\$10,000 - \$19,999	57	14.2	44 (11.0)	13 (3.3)	1.372 (0.705, 2.669)	0.351

Variables	Entire Sample (N = 400)		Receive Medication Reminder		OR (95% CI)	p
	Frequency	%	Yes (N = 289)	No (N = 111)		
\$20,000	31	7.8	23 (5.8)	8 (2.0)	1.166 (0.503, 2.702)	0.072
Currently Have Health Insurance						
No	19	4.8	11 (2.8)	8 (2.0)	-	-
Yes	381	95.2	278 (69.5)	103 (25.8)	1.963 (0.768, 5.017)	0.159
Visited Healthcare Provider (Past 12 Months)						
No	34	8.5	23 (5.8)	11 (2.8)	-	-
Yes	366	91.5	266 (66.5)	100 (25.0)	1.272 (0.598, 2.705)	0.532
Homeless (Past 12 Months)						
No	198	49.5	142 (35.5)	56 (14.0)	-	-
Yes	202	50.5	147 (36.8)	55 (13.8)	1.054 (0.680, 1.633)	0.814
Taking Medication (Past 30 Days)						
No	92	23.0	60 (15.0)	32 (8.0)	-	-
Yes	308	77.0	229 (57.3)	79 (19.8)	1.546 (0.938, 2.548)	0.087
Neurocognitive Impairment						
No	279	69.8	197 (49.3)	82 (20.5)	-	-
Yes	121	30.3	92 (23.0)	29 (7.2)	1.620 (1.009, 2.156)	0.047
Moderate to Severe Depression						
No	103	25.8	67 (16.8)	36 (9.0)	-	-
Yes	297	74.3	222 (55.5)	75 (18.8)	1.590 (0.982, 2.576)	0.059
Alcohol Use Disorders						
No	212	53.0	149 (37.3)	63 (15.8)	-	-
Yes	188	47.0	140 (35.0)	48 (12.0)	1.233 (0.794, 1.916)	0.351
Own Cell Phone						
No	34	8.5	19 (4.8)	15 (3.8)	-	-
Yes	366	91.5	270 (67.5)	96 (24.0)	2.220 (1.085, 4.543)	0.029
Injected Drugs					HIV Risk Behaviors (past 30 days)	
No	170	42.5	123 (30.8)	47 (11.8)	-	-
Yes	230	57.5	166 (41.5)	64 (16.0)	0.991 (0.636, 1.543)	0.968

Variables	Entire Sample (N = 400)		Receive Medication Reminder		OR (95% CI)	p
	Frequency	%	Yes (N = 289)	No (N = 111)		
Shared Injection Equipment						
No	80	34.8	55 (23.9)	25 (10.9)	-	-
Yes	150	65.2	111 (48.3)	39 (17.0)	1.294 (0.712, 2.351)	0.398
Had Sex						
No	72	18.0	47 (11.8)	25 (6.3)	-	-
Yes	328	82.0	242 (60.5)	86 (21.5)	1.497 (0.869, 2.579)	0.146
Number of Sexual Partners						
1	197	60.1	146 (44.5)	51 (15.5)	-	-
2 – 5	116	35.3	86 (26.2)	30 (9.1)	1.001 (0.593, 1.691)	0.996
6	15	4.6	10 (3.0)	5 (1.5)	0.699 (0.228, 2.141)	0.530
Always Used Condom with Casual Partner						
No	282	91.6	212 (68.8)	70 (22.7)	-	-
Yes	26	8.4	18 (5.8)	8 (2.6)	0.743 (0.310, 1.783)	0.506
Diagnosed with STIs ^a						
No	346	86.5	250 (62.5)	96 (24.0)	-	-
Yes	54	13.5	39 (9.8)	15 (3.8)	0.996 (0.526, 1.894)	0.996
Perceived Risk For HIV Infection						
No Risk at All	129	32.3	96 (24.0)	33 (8.3)	-	-
Moderate	145	36.3	101 (25.3)	44 (11.0)	0.789 (0.464, 1.342)	0.382
High	126	31.5	92 (23.0)	34 (8.5)	0.930 (0.532, 1.625)	0.799
Satisfied with Current Method of HIV Prevention						
No	162	40.5	124 (31.0)	38 (9.5)	-	-
Yes	238	59.5	165 (41.3)	73 (18.3)	0.693 (0.439, 1.093)	0.054

Legend: SD: Standard Deviation; OD: Odds Ratio; STIs: Sexually Transmitted Infections; OR: Odds Ratio

Note:

^aSTIs in the past 12 Months

Table 2

Multivariate logistic regression models of factors associated with interest in mHealth use to receive medication reminder ($N = 400$)

Variables	Receive Medication Reminder		
	aOR	95% CI	<i>p</i>
Age	0.987	0.967, 1.007	0.207
Sexual Orientation			
Heterosexual or Straight	-	-	-
Homosexual, Gay, or Lesbian	1.048	0.343, 3.201	0.934
Bisexual	1.406	0.952, 3.867	0.054
High School Graduate			
No	-	-	-
Yes	1.466	0.774, 2.460	0.091
Income Level			
< \$10,000	-	-	-
\$10,000 - \$19,999	1.417	0.710, 2.830	0.323
\$20,000	1.062	0.442, 2.554	0.893
Taking Medication (Past 30 Days)			
No	-	-	-
Yes	1.772	1.249, 2.161	0.037
Neurocognitive Impairment			
No	-	-	-
Yes	1.494	1.014, 1.970	0.048
Moderate to Severe Depression			
No	-	-	-
Yes	1.382	0.804, 2.373	0.242
Own Cell Phone			
No	-	-	-
Yes	1.959	0.919, 4.177	0.082
Satisfied with Current Method of HIV Prevention			
No	-	-	-
Yes	0.812	0.504, 1.310	0.393
Hosmer and Lemeshow Test: Chi-Square = 3.504; $p = 0.899$			

Legend: aOR: Adjusted Odds Ratio

Table 3
Interest in mHealth use to receive HIV risk reduction information and to assess HIV risk behaviors ($N = 400$)

Variables	Receive HIV Risk Reduction Information			Assess HIV Risk Behaviors		
	Yes ($N = 263$)	No ($N = 137$)	p	Yes ($N = 306$)	No ($N = 94$)	p
Characteristics Of Participants						
Age: Mean (SD)	41.3 (10.9)	40.3 (11.3)	1.008 (0.990, 1.027)	41.1 (10.9)	40.8 (11.6)	1.001 (0.981, 1.023) 0.896
Gender						
Male	141 (35.3)	93 (23.3)	-	174 (43.5)	60 (15.0)	-
Female	122 (30.5)	44 (11.0)	1.829 (1.186, 2.819)	132 (33.0)	34 (8.5)	1.339 (0.830, 2.159) 0.231
Sexual Orientation						
Heterosexual or Straight	220 (55.0)	125 (31.3)	-	259 (64.8)	86 (21.5)	-
Homosexual, Gay, or Lesbian	9 (2.3)	7 (1.8)	0.731 (0.266, 2.009)	12 (3.0)	4 (1.0)	0.996 (0.313, 3.170) 0.995
Bisexual	34 (8.5)	5 (1.3)	3.864 (1.473, 10.132)	35 (8.8)	4 (1.0)	2.905 (1.004, 8.410) 0.049
Ethnicity						
Non-White	108 (27.0)	39 (9.8)	-	120 (30.0)	27 (6.8)	-
White	155 (38.8)	98 (24.5)	0.571 (0.366, 0.891)	186 (46.5)	67 (16.8)	0.625 (0.378, 1.032) 0.066
Marital Status						
Married	59 (14.8)	24 (6.0)	-	63 (15.8)	20 (5.0)	-
Divorced	80 (20.0)	31 (7.8)	1.050 (0.559, 1.971)	91 (22.8)	20 (5.0)	1.444 (0.719, 2.903) 0.302
Widowed	11 (2.8)	3 (0.8)	1.492 (0.382, 5.823)	12 (3.0)	2 (0.5)	1.905 (0.393, 9.240) 0.424
Single	113 (28.2)	79 (19.8)	0.582 (0.334, 1.013)	140 (35.0)	52 (13.0)	0.855 (0.471, 1.550) 0.605
High School Graduate						
No	70 (17.5)	37 (9.3)	-	79 (19.8)	28 (7.0)	-
Yes	193 (48.3)	100 (25.0)	1.020 (0.640, 1.625)	227 (56.8)	66 (16.5)	1.219 (0.731, 2.032) 0.447
Employed						
No	218 (54.5)	113 (28.2)	-	250 (62.5)	81 (20.3)	-
Yes	45 (11.3)	24 (6.0)	0.972 (0.564, 1.676)	56 (14.0)	13 (3.3)	1.396 (0.726, 2.683) 0.317
Income						
< \$10,000	205 (51.2)	107 (26.8)	-	237 (59.3)	75 (18.8)	-
\$10,000 - \$19,999	38 (9.5)	19 (4.8)	1.044 (0.574, 1.899)	43 (10.8)	14 (3.5)	0.972 (0.504, 1.874) 0.932
\$20,000	20 (5.0)	11 (2.8)	0.949 (0.439, 2.054)	26 (6.5)	5 (1.3)	1.646 (0.610, 4.436) 0.325

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Variables	Receive HIV Risk Reduction Information			Assess HIV Risk Behaviors		
	Yes (N = 263)	No (N = 137)	p	Yes (N = 306)	No (N = 94)	p
Had Sex						
Yes	105 (45.7)	45 (19.6)	0.127	124 (53.9)	26 (11.3)	0.028
No	40 (10.0)	32 (8.0)	-	50 (12.5)	22 (5.5)	-
Number of Sexual Partners						
1	135 (41.2)	62 (18.9)	-	150 (45.7)	47 (14.3)	-
2 – 5	80 (24.4)	36 (11.0)	0.936	97 (29.6)	19 (5.8)	0.119
6	8 (2.4)	7 (2.1)	0.232	9 (2.7)	6 (1.8)	0.172
Always Used Condom with Casual Partner						
No	192 (62.3)	90 (29.2)	-	222 (72.1)	60 (19.5)	-
Yes	18 (5.8)	8 (2.6)	0.904	20 (6.5)	6 (1.9)	0.831
Diagnosed with STIs (Past 12 Months)						
No	223 (55.8)	123 (30.8)	-	266 (66.5)	80 (20.0)	-
Yes	40 (10.0)	14 (3.5)	0.168	40 (10.0)	14 (3.5)	0.651
Perceived Risk for HIV Infection						
No Risk At All	72 (18.0)	57 (14.2)	-	87 (21.8)	42 (10.5)	-
Moderate	100 (25.0)	45 (11.3)	0.025	114 (28.5)	31 (7.8)	0.038
High	91 (22.8)	35 (8.8)	0.007	105 (26.3)	21 (5.3)	0.004
Satisfied with Current Method of HIV Prevention						
No	115 (28.7)	47 (11.8)	-	130 (32.5)	32 (8.0)	-
Yes	148 (37.0)	90 (22.5)	0.069	176 (44.0)	62 (15.5)	0.146

Legend: SD: Standard Deviation; OD: Odds Ratio; STIs: Sexually Transmitted Infections; OR: Odds Ratio

Note:

^aSTIs in the past 12 Months

Table 4

Multivariate logistic regression models of factors associated with interest in mHealth use to receive HIV risk reduction information and to assess HIV risk behaviors ($N = 400$)

Variables	Receive HIV Risk Reduction Information			<i>p</i>
	aOR	95% CI		
Gender				
Male	-	-	-	-
Female	1.606	0.993, 2.597	0.054	
Sexual Orientation				
Heterosexual or Straight	-	-	-	-
Homosexual, Gay, or Lesbian	0.636	0.223, 1.813	0.397	
Bisexual	2.700	0.984, 7.406	0.054	
Ethnicity				
Non-White	-	-	-	-
White	0.536	0.330, 0.870	0.012	
Marital Status				
Married	-	-	-	-
Divorced	0.932	0.468, 1.855	0.840	
Widowed	1.387	0.339, 5.664	0.649	
Single	0.539	0.298, 0.977	0.042	
Neurocognitive Impairment				
No	-	-	-	-
Yes	1.062	0.619, 1.822	0.828	
Moderate to Severe Depression				
No	-	-	-	-
Yes	1.124	0.652, 1.937	0.673	
Alcohol Use Disorders				
No	-	-	-	-
Yes	1.264	0.786, 2.034	0.334	
Had Sex				
No	-	-	-	-

Variables	Receive HIV Risk Reduction Information			p
	aOR	95% CI		
Yes	1.552	0.883, 2.726		0.127
Perceived Risk for HIV Infection				
No Risk At All	-	-	-	-
Moderate	1.687	0.973, 2.925		0.063
High	1.547	1.028, 2.189		0.035
Satisfied with Current Method of HIV Prevention				
No	-	-	-	-
Yes	0.835	0.511, 1.364		0.472

Hosmer and Lemeshow Test: Chi-Square = 7.079; $p = 0.528$

Variables	Assess HIV Risk Behaviors			p
	aOR	95% CI		
Sexual Orientation				
Heterosexual or Straight	-	-	-	-
Homosexual, Gay, or Lesbian	0.405	0.083, 1.986		0.265
Bisexual	3.513	0.687, 7.975		0.131
Ethnicity				
Non-White	-	-	-	-
White	0.580	0.269, 1.249		0.164
Currently Have Health Insurance				
No	-	-	-	-
Yes	3.798	0.943, 5.303		0.061
Visited Healthcare Provider				
No	-	-	-	-
Yes	3.168	1.030, 9.747		0.044
Moderate to Severe Depression				
No	-	-	-	-
Yes	3.149	1.333, 7.439		0.009
Alcohol Use Disorders				
No	-	-	-	-

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Variables	Assess HIV Risk Behaviors			p
	aOR	95% CI		
Yes	1.477	0.697, 3.130		0.308
Own Cell Phone				
No	-	-	-	-
Yes	1.452	0.429, 4.915		0.549
Shared Injection Equipment				
No	-	-	-	-
Yes	2.085	0.938, 4.635		0.072
Perceived Risk for HIV Infection				
No Risk At All	-	-	-	-
Moderate	0.704	0.259, 1.909		0.490
High	0.612	0.203, 1.844		0.383
Hosmer and Lemeshow Test: Chi-Square = 6.478; p = 0.594				