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Accessing Pharmacy-Based HCV/HIV Services Among People Who Use Drugs in Rural Kentucky

By

Michelle Duong

Degree to be Awarded: Master of Science in Public Health

Department of Epidemiology

_____

Dr. Hannah Cooper, Sc.D.

Committee Chair

_____

Dr. Chris Delcher, Ph.D.

Committee Chair

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By

Michelle Duong

B.S.

University of Florida

2018

Faculty Thesis Advisor: Dr. Hannah Cooper, Sc.D.

Faculty Thesis Advisor: Dr. Chris Delcher, Ph.D.

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Abstract

Accessing Pharmacy-Based HCV/HIV Services Among People Who Use Drugs in Rural Kentucky

By Michelle Duong

Purpose: The United States has experienced outbreaks of HIV and HCV among people who use drugs (PWUD) and live in rural areas. Pharmacy-based interventions may play a crucial role in preventing these infections especially in areas where traditional health care access points are limited. Even so, the willingness of rural PWUD to use pharmacies for HIV/HCV harm reduction services is unknown. The purpose of this study was to identify the characteristics of PWUDs living in rural Kentucky associated with attitudes towards using pharmacy-based harm reduction services. The characteristics of interest were chosen based on the Anderson and Newman framework of health services.

Methods: This study used baseline data from the CARE2HOPE longitudinal study. CARE2HOPE participants were recruited using respondent-driven sampling (RDS) methods. To be eligible, individuals had to live in one of five counties in eastern Kentucky and be an adult who had either used an opioid to get high or injected a drug to get high in the past 30 days. Logistic regression was used to create two separate models for each outcome.

Results: 325 participants were enrolled in the study. Among those who answered the survey questions, 74% answered that they were “very likely” to participate in free HIV testing and 78% indicated that they were “very likely” to participate in free HCV testing offered at the pharmacy. Only one characteristic was found to be associated with the likelihood of participating in HIV testing at pharmacies. Those who previously tested for HIV were less willing to go to a pharmacist for free HIV testing.

Conclusion: Pharmacy-based HIV and HCV testing was acceptable among most PWUD participants. Our findings suggest that the choice of using harm reduction services in pharmacies is not affected by the individual’s characteristics.

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BACKGROUND

There has been an increase in reported cases of injection-related infectious diseases, such as Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV), in the U.S.(1). These outbreaks are prevalent in rural areas among people who inject drugs (PWID)(2). The largest increases of reported cases of HCV, from 2006-2012, occurred in predominantly rural states located in Central Appalachia, including Kentucky, Tennessee, Virginia, and West Virginia(3). In 2017, the U.S. Centers for Disease Control and Prevention reported that Kentucky had the seventh highest HCV prevalence in the U.S.(4). In 2015, Scott county, a rural county in southeastern Indiana, experienced the fastest moving HIV outbreak ever documented in the U.S(5). The outbreak was linked to injecting the prescription opioid oxymorphone, and approximately 84% of those who were HIV positive were also HCV positive(5).

Detection of HCV and HIV in the early stages increases access to care for those infected, allows the patients to make decisions about their treatment, and prevents further transmission to high risk groups. A goal of the National HIV/AIDS Strategy is to increase the proportion of HIV-diagnosed individuals whose viral load is effectively suppressed to 80% by 2020(6). Achieving this goal is contingent on early diagnosis and care. If a person receives care within thirty days of diagnosis, they are more likely, on average, to achieve viral suppression in 15.4 months(7). Moreover, pre-exposure prophylaxis (PrEP) is available for those at risk for HIV and if taken daily, can reduce the risk of HIV infection by at least 74% among PWID(8). The HIV care cascade has also been adapted to help those with HCV. The US National Viral Hepatitis Action Plan 2017-2020(9) seeks to eliminate new viral hepatitis infections, increase knowledge of HCV status, and

increase access to care for those who have or are at risk for the disease. Antiviral treatment for HCV is more effective in the earlier stages of the disease and therefore it is important to detect HCV early on(10). Recent advances in medicine for HCV have demonstrated fewer side effects and shorter therapy times(11).

Pharmacists are in an ideal position to improve health care and management to individuals living with HIV and/or HCV (12–14). Pharmacists' involvement include medication adherence counseling(12), HIV and/or HCV treatment education(13), and over the counter syringe sales(15). HIV testing services(16) and point-of-care HCV screening programs(17) at pharmacies are both effective in reaching out to at-risk individuals. Among PWIDs, those that received harm reduction education and services during their syringe sale at the pharmacy were more likely to report using a sterile syringe at 3-months follow-up(18). Expanded pharmacy services for PWID may decrease injection risk for infection(18).

Community pharmacies are effective in providing health services that target health promotion and disease prevention in rural areas(19). At least 70% of rural residents live within 15 miles from their pharmacy(20) Yet, barriers to health care in rural areas include low income, limited resources and technology, and insufficient public transport(21). It is difficult to attract and retain physicians to live in rural areas to treat residents who have poorer outcomes than their urban counterparts(22). Furthermore, stigmatization and criminalization of people who use drugs may discourage them from accessing harm reduction services in these areas(23). With the increased rate of success in HIV/HCV treatments, it is important to expand access for HIV and HCV screenings. Therefore, utilizing pharmacies can increase access to testing services.

Despite the documented risk of HIV and HCV in rural areas among PWID and the benefits of harm reduction services in pharmacies, there is little information on PWID willingness to engage in HIV and HCV testing at pharmacies in rural areas. Guided by Andersen and Newman Framework of Health Services Utilization(24), the purpose of this analysis is to identify the characteristics of people who use drugs living in rural Kentucky that are associated with the likelihood of using pharmacy-based HIV and HCV testing.

METHODS

Study Design

As part of the Kentucky Communities and Researchers Engaging to Halt the Opioid Epidemic (CARE2HOPE) project (https://care2hope.org/), a sample of PWUD (N=336) was created to inform the development of evidence-based responses to prevent and treat the consequences of opioid-related syndemics, such as HCV and HIV, in 5 rural counties in eastern Kentucky. To be eligible for the study, participants must have been at least 18 years of age, reside in one of the five Appalachian Kentucky counties, and have either used opioids to get high or injected any drug to get high in the past thirty days. Those who previously tested positive for HIV(n=1) or HCV(n=128) were excluded in the analysis.

Participants in this study were recruited through respondent driven sampling (RDS) between February 2018 and November 2019. The seeds for the RDS were recruited from two sources: (1) a sample derived from an online survey, previously delivered in this area, and (2) community outreach, including cookouts, advertisements, and community partners. To be eligible for this study, seeds had to meet all eligibility criteria and have large networks (i.e., report having used drugs with at least 10 people in the past 30 days for women and at least 20 people in the past 30 days for men). Seeds were given three numbered coupon cards each and asked to provide them to peers who they thought may be interested in participating in the study. Those who successfully recruited an eligible participant were compensated with $10 cash. The next wave of invited participants went through the same process and if eligible, were invited to participate in the study. They were then asked to refer up to three additional participants

and this continued until the desired number of participants was met. This study was approved by the University of Kentucky IRB, and all participants consented.

Measures

Two dependent variables were selected for multivariate analyses: likelihood of participating in HIV testing and likelihood of participating in HCV testing at the pharmacy. These variables were derived from Likert-type question items (e.g. “How likely would you be to participate in free HIV [HCV] testing if it was offered by a local pharmacy?”). Responses were on a scale of 0-3 with 0 representing “very unlikely” to 3 representing “very likely.” After examining the distribution of the responses (table 2), both variables were recategorized into dichotomous variables as shown in table 3 (i.e. “very likely” versus all other responses).

The independent variables of interest were chosen based on the Anderson and Newman framework of health services(24). In the Andersen and Newman framework of health services, three characteristics affect an individual’s access to and use of health services: predisposing factors, enabling factors, and needs factors. The predisposing components are properties that existed prior to the onset of the illness including age, sex, social networks, and culture. The enabling component of the framework describes the logistical aspect of obtaining care and using services. The needs component addresses the reason a person may seek help. This component describes two perspectives: the perceived risk from the individual and the evaluated judgment from the professional.

In this analysis, the predisposing factors (age, gender, education, race/ethnicity, and cohabitation), enabling factors (homelessness, health insurance, and income), and

needs factors (prior access to care and the sharing of items used to administer drugs) are used to understand the probability of using health care services provided at pharmacies. Prior access to care is determined from the questions “Have you ever been tested for HIV, the AIDS virus, before today?” and “Have you ever been tested for hepatitis C before today?”

Analysis

Before beginning data analysis, transformations were made on the variables and missing values were excluded from the model. Categories of some variables such as “don’t know” were recoded as missing. Categorization of some variables (age, and education) was required to address wide distributions in the responses. Those who responded “married” or “living with partner” were categorized as cohabiting. Response categories with very few responses were removed from the analysis (i.e. one response for transgender). All other choices were included as no cohabitation. Due to the homogenous nature of the responses, race/ethnicity were not included in the analysis. Descriptive statistics were used to summarize the key variables. Before performing logistic regression, bivariate analysis using Pearson chi-square was used to assess the association between each predictor and each outcome variable. Although all factors were deemed to be a poor model fit (alpha greater than 0.5), the variables were still included in the both models due to *a priori* theoretical criteria. After bivariate analyses, the variables were examined for multicollinearity. For both models, the conditional indices were less than 30 indicating no multicollinearity between the variables and the outcome. SAS v9.4 was used for all analyses(25).

RESULTS

Descriptive statistics

Table 1 shows the baseline descriptive statistics for the variables included in this study stratified by those included in each model. The proportions for each variable were similar for each cohort.

Among those included in the HIV cohort, the following characteristics were observed from the sample. After excluding those who tested positive for HIV and those who had incomplete responses, there were 304 observations that were analyzed for the likelihood of participating in HIV testing. The predisposing factors were first identified. The majority of the respondents fell within the age range of 25-34 years (40.8%), completed a high school diploma or General Education Diploma (GED) (45.1%), were male (53.3%), were Not Hispanic or Latino (99.7%), self-identified as White (97.4%) and lived alone (57.2%). For enabling factors, the following characteristics were observed from the sample. More than half of the respondents were homeless (63.2%), had health insurance (83.2%), and had a total income of less than $1000 in the past thirty days (71.4%). Lastly, among the needs factors, the following characteristics were observed. A higher proportion of the respondents had tested for HIV previously (65.8%) and more than half of the respondents had shared needles, syringes, cookers, cottons or rinse water within the past 30 days (58.2%).

Among those included in the HCV cohort, the following characteristics were observed from the sample. After excluding those who tested positive for HCV and those who had incomplete responses, 185 observations were analyzed for the likelihood of

participating in HCV testing. First, the predisposing factors were identified. The majority of the respondents fell within the age range of 25-34 years (38.4%), completed a high school diploma or General Education Diploma (GED) (48.1%), were male (54.0%), were Not Hispanic or Latino (100.0%), self-identified as White (96.2%) and lived alone (54.6%). Second, the enabling factors were identified. More than half of the respondents were homeless (63.8%), had health insurance (82.2%), and had a total income of less than $1000 in the past thirty days (67.6%). Finally, the need factors were identified. More than half of the respondents had tested for HCV previously (55.1%) and had shared needles, syringes, cookers, cottons or rinse water within the past 30 days (67.6%).

Outcome variables

Table 2 shows the distribution of the responses of the outcome variables. Most of the respondents tended to choose “very likely” to both questions pertaining to the likelihood of participating in free HIV testing or free HCV testing at pharmacies (75.0% and 80.0% respectively). Table 3 compares the outcome variable used in each model where the response “very likely” is compared with all other responses combined.

Analysis of utilizing free HIV testing at pharmacies

Table 3 shows the odds ratios and 95% confidence intervals (CIs) that were calculated for each characteristic. There were 304 observations included in the model. Among the predisposing factors, the odds ratio for the likelihood of participating in free HIV testing for age, gender, and cohabitation were not significant. The odds ratio for those who were between the ages of 25 and 34 compared to those who were between the ages of 18 and 24 was 1.22 (CI: 0.45, 3.33). The odds ratio for those who were between

the ages of 35 and 44 compared to those who were between the ages of 18 and 24 was 1.59 (CI: 0.56, 4.53). The odds ratio for those who were between the ages of 45 and 64 compared to those who were between the ages of 18 and 24 was 1.46 (CI: 0.46, 4.58). The odds ratio for females compared to males was 1.02 (CI: 0.58, 1.82). The odds ratio for those who live together compared to those who do not was 1.33 (CI: 0.76, 2.33). The confidence interval indicates a statistically significant odds ratio for those who have a high school diploma, or a GED compared to those who completed some high school or less (OR: 0.50 CI: 0.26, 0.99). Those who completed a high school diploma or GED were less likely to go to the pharmacy for free HIV testing compared to those who have less education. The odds ratio for those who have had completed some college and above compared to those who completed some high school or less was not significant (OR: 0.58 CI: 0.25, 1.31). Among the enabling factors, the odds ratio for the likelihood of participating in free HIV testing for homelessness, having health insurance, and income were not significant. The odds ratio for those who were homeless compared to those who were not was 1.14 (CI: 0.64, 2.04). The odds ratio for those who have health insurance compared to those who do not was 1.14 (CI: 0.64, 2.04). The odds ratio for those who have an income higher than or equal to $1,000 compared to those who have lower was 0.76 (CI: 0.42, 1.44). Among the needs factors, the odds ratio for those who have tested for HIV previously before the study was the only characteristic that was statistically significant. Those who previously tested for HIV were less than willing to go to a pharmacy for free HIV testing (OR: 0.44 CI: 0.23, 0.84). The odds ratio for those who shared needles, syringes, cookers, cottons, or rinse water within the past 30 days

compared to those who did not share any of the above was insignificant (OR: 1.08 CI: 0.62, 1.88).

Analysis of utilizing free HCV testing at pharmacies

Table 4 shows the odds ratios that were calculated for each characteristic. There were 185 observations included in the model. Among the predisposing factors, there were no statistically significant odds ratios. The odds ratio for those who were between the ages of 25 and 34 compared to those who were between the ages of 18 and 24 was 0.79 (CI: 0.16, 3.36). The odds ratio for those who were between the ages of 35 and 44 compared to those who were between the ages of 18 and 24 was 0.96 (CI: 0.21, 4.33). The odds ratio for those who were between the ages of 45 and 64 compared to those who were between the ages of 18 and 24 was 1.03 (CI: 0.46, 4.98). The odds ratio for those who have a high school diploma, or a GED compared to those who completed some high school or less was 0.54 (CI: 0.22, 1.34). The odds ratio for those who have had completed some college and above compared to those who completed some high school or less was 0.76 (CI: 0.23, 2.51). The odds ratio for females compared to males was 0.93 (CI: 0.41, 2.12). The odds ratio for those who live together compared to those who do not was 1.83 (CI: 0.83, 4.00). Among the enabling factors, there were no statistically significant odds ratios. The odds ratio for those who were homeless compared to those who were not was 1.95 (CI: 0.81, 4.00). The odds ratio for those who have health insurance compared to those who do not was 1.87 (CI: 0.68, 5.17). The odds ratio for those who have an income higher than or equal to $1,000 compared to those who have lower was 1.27 (CI: 0.54, 3.00). Among the needs factors, there were no statistically significant odds ratios. The odds ratio for those who had tested for HCV previously compared to those who did not

was 0.91 (CI: 0.41, 1.99). The odds ratio for those who shared needles, syringes, cookers, cottons, or rinse water within the past 30 days compared to those who did not share any of the above was 0.91 (CI: 0.41, 2.02).

DISCUSSION

We examined the characteristics associated with the potential use of harm reduction services at pharmacies among people who use drugs. Multivariate analyses revealed few significant differences for the likelihood of participating in HIV testing. People who have been tested previously were less likely to indicate that they were interested in HIV testing in a pharmacy. Additionally, participants who had a high school diploma or GED were also less likely than those who do not have a high school diploma to indicate that they would participate in free HIV testing if it was offered at pharmacies. No other factors were significant in any of the models.

Pharmacy-based HIV and HCV testing were acceptable among most PWUD participants (75.0% and 80.0% respectively). This finding is supported by previous studies including a systematic review of HIV/HCV services for PWIDs in nonurban areas(26). One common harm reduction service PWID partake in at the pharmacy is over-the-counter syringe sales(26). PWID who participated in syringe exchange programs at pharmacies showed a decrease in high-risk drug behavior(27). The utilization of pharmacies as a place to provide harm reduction services such as free HIV and HCV testing as well as clean needles to PWUD may be effective in reaching high risk populations(28).

It is interesting to note that prior access to care resulted in decreased acceptance of HIV testing at pharmacies. Those that had previously tested for HIV were less likely to choose to participate in free HIV testing at the pharmacy (OR: 0.44 CI: 0.23, 0.84). According to the Anderson and Newman framework of health services, prior experience should be associated with uptake in heath services. However, on the contrary, this study

found that those who had a prior HIV test showed decreased acceptance of HIV testing at pharmacies. A few hypotheses were formed. First, there may be concerns about stigma among the respondents. They may have had a negative experience with their provider concerning HIV testing and decided to avoid any future testing. Second, some may have tested negative for HIV despite participating in risky behaviors (such as unsafe sex or sharing of needles) and decided that the emergency to be tested is over. They may feel that they are no longer at risk for HIV since they tested negative even though they participated in risky behaviors and therefore, they could continue doing what they do and feel safe. Finally, some people may have had a positive experience and found no need to visit another provider. Another interesting result was that those who had a high school diploma or a GED were less likely to choose to participate in free HIV testing at the pharmacy. A study conducted in Myanmar suggested that among young people who use methamphetamine, those who have higher education were more likely to have previously tested for HIV than those who had primary education(29). Another study in India had a similar result. Among injection drug users, those who had at least five years of education were more likely to have previously tested for HIV(30). Therefore, the reasons as to why this study found that those who had a high school diploma or a GED were less likely to choose to participate in free HIV testing may relate to the ideas above where those who had previously tested for HIV were also less likely to choose to participate in free HIV testing at the pharmacy.

Several limitations in this study are noteworthy. First, those who previously tested positive for HIV or HCV would skip the question that was used to determine the outcome variable. Since the analysis only used complete cases, this limited the sample size.

Second, the population in the five Kentucky counties was predominately White. There may be implications in generalizing the outcomes of this study to all nonurban areas. Previous research on syringe sales at pharmacies suggests that black injection drug users were more likely to use resources other than pharmacies to obtain their clean syringes(28). Research in other nonurban areas may help give a holistic view on the outcome.

Our study has several strengths. First, interviewers were trained to minimize the potential for recall and social desirability bias. Second, this analysis was developed using a theory-based approach. The framework for health utilization allowed us to choose key variables that may affect the individual's choice in using pharmacies.

Future Directions

Pharmacy-based interventions may play a crucial role in preventing these infections especially in rural areas where traditional health care access points are limited. Further assessments on barriers regarding the implementation of evidence-based harm reduction services in pharmacies could provide greater insights in developing an effective mode of delivery to PWUDs in rural Kentucky. Understanding the characteristics of the population and how they relate to intervention uptake can help improve interventions. Our findings suggest that the choice of using harm reduction services in pharmacies is not affected by PWUD predisposing, enabling, or needs factors. The high likelihood of PWUDs to indicate that they would be willing to participate in free HIV and/or HCV testing at pharmacies provide evidence in support of harm reduction services at pharmacies regardless of their individual characteristics.

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TABLES

Table 1. Summary Statistics for Analysis Variables by Cohort

	HIV (n=304)		HCV (n=185)	
Predisposing Factors	n	%	n	%
Age (years)				
18-24	25	8.2	15	8.1
25-34	124	40.8	71	38.4
35-44	101	33.2	59	31.9
45-64	54	17.8	40	21.6
Highest Level of Education				
Less than high school	96	31.6	59	31.9
High school diploma or GED	137	45.1	89	48.1
Some college and above	71	23.4	37	20.0
Gender				
Male	168	55.3	100	54.0
Female	136	44.7	85	46.0
Ethnicity				
Not Hispanic or Latino	303	99.7	185	100.0
Race				
Self-identified as White	296	97.4	178	96.2
Self-identified as anything else	8	2.6	7	3.8
Cohabitation				
No	174	57.2	101	54.6
Yes	130	42.8	84	45.4
Enabling Factors				
Homeless in past six months				
No	192	63.2	118	63.8
Yes	112	36.8	67	36.2
Currently have health insurance				
No	51	16.8	33	17.8
Yes	253	83.2	152	82.2
Total Income in past 30 days				
<$1000	217	71.4	125	67.6
≥$1000	87	28.6	60	32.4
Needs Factors				
Ever been tested for HIV before				
No	104	34.2	-	-
Yes	200	65.8	-	-
Ever been tested for HCV before				
No	-	-	83	44.9
Yes	-	-	102	55.1
Shared needles, syringes, cookers, cottons or rinse water in past 30 days				
No	177	58.2	125	67.6
Yes	127	41.8	60	32.4

Table 2. Summary Statistics for Outcome Variables

Outcome	n	%
Likelihood of free HIV testing if available at pharmacy		
Very unlikely	11	3.6
Somewhat unlikely	12	4.0
Somewhat likely	53	17.4
Very likely	228	75.0
Likelihood of free HCV testing if available at pharmacy		
Very unlikely	5	2.7
Somewhat unlikely	8	4.3
Somewhat likely	24	13.0
Very likely	148	80.0

Table 3. Summary Statistics for Outcome Variables with Responses Combined

Outcome	n	%
Likelihood of free HIV testing if available at pharmacy		
Very likely	228	75.0
Anything else	76	25.0
Likelihood of free HCV testing if available at pharmacy		
Very likely	148	80.0
Anything else	37	20.0

Table 4. Adjusted odds ratios (OR) and 95% confidence intervals (CI) for PWUDs reporting "very likely" for willing to participate in free HIV testing at pharmacies

Demographic		OR	95% CI	
Age				
	25-34 vs. 18-24	1.22	0.45	3.33
	35-44 vs. 18-24	1.59	0.56	4.53
	45-64 vs. 18-24	1.46	0.46	4.58
Education Status				
High school diploma or GED vs. Less than high school		0.50	0.26	0.99
Some college and above vs. Less than high school		0.58	0.25	1.31
Gender				
	Female vs. Male	1.02	0.58	1.82
Cohabitation				
	Yes vs. No	1.33	0.76	2.33
Homeless				
	Yes vs. No	1.14	0.64	2.04
Have insurance				
	Yes vs. No	1.49	0.72	3.06
Income				
	≥$1000 vs. <1000	0.76	0.42	1.44
Ever been tested for HIV before				
	Yes vs. No	0.47	0.25	0.88
Shared needles, syringes, cookers, cottons or rinse water in past 30 days				
	Yes vs. No	1.08	0.62	1.88

Table 5. Adjusted odds ratios (OR) and 95% confidence intervals (CI) for PWUDs reporting "very likely" for willing to participate in free HCV testing at pharmacies

Demographic		OR	95% CI	
Age				
	25-34 vs. 18-24	0.79	0.16	3.36
	35-44 vs. 18-24	0.96	0.21	4.33
	45-64 vs. 18-24	1.03	0.21	4.98
Education Status				
	High school diploma or GED vs. Less than high school	0.54	0.22	1.34
	Some college and above vs. Less than high school	0.76	0.23	2.51
Gender				
	Female vs. Male	0.93	0.41	2.12
Cohabitation				
	Yes vs. No	1.83	0.83	4.00
Homeless				
	Yes vs. No	1.95	0.81	4.69
Have insurance				
	Yes vs. No	1.87	0.68	5.17
Income				
	≥$1000 vs. <1000	1.27	0.54	3.00
Ever been tested for HCV before				
	Yes vs. No	0.91	0.41	1.99
Shared needles, syringes, cookers, cottons or rinse water in past 30 days				
	Yes vs. No	0.91	0.41	2.02