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Drug use, hepatitis C, and service availability: Perspectives of incarcerated rural women

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Abstract

This study examined drug use, hepatitis C, and service availability and use among a high-risk sample of rural women serving time in jails. Data was collected from female offenders (n=22) who participated in four focus groups in three rural jail facilities located in Appalachia. Findings indicated that drug misuse is prevalent in this impoverished area of the country, and that the primary route of administration of drug use is injection. Findings also indicate that injection drug use is also commonly associated with contracting hepatitis C (HCV), which is also perceived to be prevalent in the area. Despite knowledge associated with HCV risks, women in this sample were seemingly apathetic about the increasing spread of HCV in the area and unconcerned about the long-term consequences of the course of the infection. Implications for future research and practice are discussed.

Keywords

drug use; women; HCV

Introduction

Health consequences of drug use and abuse have been the target of clinical and empirical research for several years. Health problems associated with drug use can be serious including heart disease (Afonso, Mohammad, & Thati, 2007) and other chronic conditions

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such as HIV (Milloy et al., 2012) and hepatitis C (HCV) (Havens et al., 2013). The association between drug use and health risk is often exacerbated by injection drug use, sharing injection drug use equipment, and unprotected sexual activity with partners who engage in these risk behaviors (e.g., Centers for Disease Control [CDC], 2013; Evans, et al., 2003; Hagan, et al., 2001). Despite these associated risks, and the subsequent health care costs, little research has examined women's understanding of how drug use impacts their health, their knowledge of health risk behaviors, and availability of health and behavioral health services, especially in rural communities. This study proposes an exploratory look at drug use, health consequences of drug use (primarily hepatitis C), and health service availability among a high-risk sample of drug-using women from rural Appalachia serving time in jails.

Drug use and health

The association between drug use and poor health outcomes has been well documented in the literature (e.g., Leukefeld, et al., 2002; McCoy et al., 2001). Specifically, studies have showed that drug use, particularly when accompanied by a criminal lifestyle, is associated with adverse health and health consequences (e.g., Leukefeld, et al., 2002; Mateyoke-Scrivner, et al., 2003). One study among substance-involved prisoners found that traumatic injury was the most frequently reported lifetime medical problem (89%), followed by dental problems (87%), respiratory (49%), musculoskeletal (46%), sexually transmitted diseases (36%), neurological (34%), gastrointestinal (33%), and circulatory (32%) problems (Leukefeld, et al., 2002). In addition, another study found that an extensive criminal career was consistent with a lengthier addiction career (even after statistically controlling for age), including greater use of alcohol, marijuana, cocaine, sedatives, amphetamine, and multiple drug use. (Mateyoke-Scrivner, et al., 2003). While these studies demonstrate that the health consequences of drug use are high, especially among offenders, they are further complicated by injection drug use and sharing drug injection equipment.

Hepatitis C as a public health risk

A specific health problem associated with injection drug use is hepatitis C (HCV). HCV is a virus that usually develops into a chronic blood borne liver infection with more than 3.2 million people infected nationally, and an estimated 1.3 million women (CDC, 2013). HCV is quickly becoming a national public health crisis with deaths associated with HCV now surpassing deaths associated with HIV (Kim, Onofrey, & Church, 2013). HCV, along with other forms of viral hepatitis A and B, are among the leading causes of liver cancer in the US (CDC, 2013). HCV is primarily transmitted through exchanging of blood through needle use, commonly associated with illegal drug injection and, less rarely, in health care settings through needle-stick injuries (Thompson, Perz, Moorman, & Holmberg, 2009). Thus, drug users are among the most at-risk populations for contracting HCV (CDC, 2013) – not only for the sharing of needles, but also for the sharing of other drug injection paraphilia (Hagan et al., 2001).

Despite what we know about the association between HCV and injection drug use, the study of HCV among concentrated populations of drug injectors is relatively limited. Havens and colleagues (2013) reported a HCV prevalence rate of 54.6% among a sample of rural

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injectors in Appalachia. In this study, independent correlates of positive HCV status included injecting for 5 or more years, a history of trauma, and sharing syringes in the past 6 months. The study also found that injecting cocaine and prescription opioids were also significant risks for contracting HCV.

Rural drug use and health

With rates of HCV at an all-time high, there is also a critical need to examine vulnerable groups of drug users who may be at highest risk. Studies have shown that the abuse of prescription opiates is at an unprecedented high in the rural Appalachian region, and this impoverished area ranks among the highest in the country for rates of prescription drug abuse (Zhang et al., 2008). One study found that rural individuals are significantly more likely to abuse prescription drugs compared to urban residents (Havens et al, 2010). The rate of prescription drug abuse has contributed to increases in criminal justice consequences with drug arrests for narcotics accounting for about 20% of the state's overall arrests, increasing nearly 9% between 2011 and 2012 (Crime in Kentucky, 2012). The Kentucky State Police estimate that a drug-related crime was committed in 2012 every 13 minutes (Crime in Kentucky, 2012).

As rates of drug use in rural areas increase, so has the risky method of injection as a route of administration. Nearly a decade ago, estimates for Kentucky drug users indicated that about 16% had ever injected any drug (Leukefeld et al., 2002), and several years ago one study documented the low HIV seropositivity among rural offenders being related to low rates of injection drug use (Oser et al., 2006). In more recent studies, the injection prevalence rate in Appalachia is far greater than the rate reported in 2002 (44.3%) (Havens, Walker, & Leukefeld, 2007). Further, a recent study found that among opiate users, rural participants are more likely to inject certain types of drugs, including morphine, compared to urban users (Young, Havens, & Leukefeld, 2010).

Specific to women, injection drug use not only poses a tremendous health risk due to consequences associated with their own injection practices, but they often find themselves in vulnerable positions of being injected by a partner or a dealer in order to get drugs (Tompkins, et al., 2006). The large majority of women's HCV cases are attributed to injection drug use (Highleyman, 2005). While injecting prescription drugs is prevalent in Appalachian Kentucky, it is quickly becoming a significant public health concern for the region given the risks associated with HCV. This emerging trend creates an urgent and compelling need for research on an impoverished, understudied, and vulnerable sub-group of women already at increased risk due to limited resources for drug treatment and health care.

Drug use, health, and service use among rural women offenders

Despite a number of health, mental health, and substance abuse issues being attributed to the isolation and cultural issues of living in a rural community (Foxhall, 2000), empirical research on the health disparities, health risks, and service utilization of this disadvantaged group of women has been severely neglected in the scientific and clinical literature. The jail is used as a venue for this study with rural women who are at high-risk for engaging in drug

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use and health risk behavior, but who are not actively seeking treatment. The jail provides an ideal setting because studies on offender populations have been shown to have high rates of substance use (Karberg & James, 2005; Mumola & Karberg, 2006) and higher rates of other health problems including HCV compared to the general population (Baillargeon et al., 2003; CDC, 2011; Wu et al., 2001). In addition, the rates for HCV have been found to be disproportionately higher for female offenders than male offenders (Baillargeon et al., 2003; Wu et al., 2001).

This exploratory study is grounded conceptually in the Andersen and Newman model (1973) of service utilization. The model recognizes that an individual's use of health services varies based on (1) individual factors, (2) societal reasons, and (3) characteristics of the treatment system. Leukefeld et al. (1998) modified and tailored the individual determinants of the Andersen and Newman (1973) model to substance using offenders. Specifically, determinants of service utilization in the Leukefeld modified model include: *predisposing factors* (demographics and characteristics), *historical health factors* (severity of addiction, previous treatment episodes), *potential enabling factors* (perceived availability of treatment services), *current illness level factors* (includes both a clinical evaluation and an individual's perception of illness). Penchansky and Thomas (1981) further explained perceived access to services varies based on the degree of "fit" between the needs of the client and the service delivery system – which includes perceived access to needed health and behavioral health treatment.

Models of service utilization, particularly behavioral health service use, have been less evaluated for populations of rural women. Women offenders are also not likely to use needed health services when they are on the street (Staton-Tindall et al., 2001; Staton-Tindall et al., 2007). Thus, there is a critical need to better understand the relationship between factors associated with service utilization including drug use, health and health-related risks, and service availability among an understudied and at-risk group of vulnerable women. The purpose of this study is to describe drug use, health consequences of drug use including HCV, and service availability among a high-risk sample of women from rural Appalachia serving time in jails.

Method

Participants

As part of a larger study (NIH/NIDA 1R01-DA033866), data was collected from 22 women who participated in four focus groups. The women were recruited from three rural jail facilities located in Kentucky counties designated as Appalachian (Appalachian Regional Commission, 2013). Participants were selected based on criteria for the larger study which included: 1) NIDA-modified ASSIST score of 4+ for any drug which is indicative of moderate risk substance abuse (NIDA, 2009); 2) engagement in at least one sex risk behavior in the past 3 months; and 3) incarceration period of at least 2 weeks but no longer than 3 months. In order to ensure confidentiality of responses, demographic information was not collected from participants at the time of the focus groups. However, observer notes indicated that all focus group participants were all white (n=22) and between the ages of 18 – 50.

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Procedure

This study was approved by the university IRB and a federal Certificate of Confidentiality was obtained. As part of the recruitment process for the larger study, potential study participants were selected for screening using a cluster random sampling procedure based on projected release dates from the jail. Specifically, all women residing in the jail on the day of screening had an equal opportunity of being selected if they had a release date within the targeted time frame. From the potential sampling frame, the data coordinator randomly selected participants for screening using the Research Randomizer computer-based program (www.randomizer.org).

Screening included a face-to-face 20 minute session to determine study eligibility (listed above). Focus group participation was included as part of informed consent. Therefore, all participants who enrolled in the larger study trial and completed a baseline interview were eligible to participate in the focus group.

Attendance in the four focus groups ranged from 3 – 7 women per group. Each group lasted approximately 50 minutes. Focus groups were conducted in private group rooms within the jails. Groups were moderated by the study Principal Investigator and the project coordinator, both of whom were white females. After obtaining permission from the focus group participants, each session was audio taped. Participants were told they should not feel pressure to disclose personal experiences, and responses could be general and common to what "women typically do" in various situations. At the conclusion of the group, each participant received $10. Focus groups were conducted between February and May of 2013.

Focus group questions

Questions were developed to understand women's drug use, health behaviors, and perceptions of service availability. Selected questions for this analysis included the following:

1. What are the typical drugs of choice in this area? In other words ***what*** are people using?
2. And ***how*** are people using drugs?
3. Thinking more specifically about women, ***why*** do you think women use drugs?
4. For women who use drugs, what kind of an impact does it have on their health?
5. When are these types of behaviors most likely to occur? In other words, are there ***situations*** that are more "risky" for women?
6. What kinds of services (or "help") are available for individuals with HCV in this community?

Content Analysis

Audio tapes from each focus group were transcribed into MicroSoft Word ® documents. No identifying information was collected during the focus group session about any of the participants, and they were asked not to use names during the discussions. The analytic

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approach for this study was content analysis, which is an technique that has been used to develop themes from qualitative data including focus groups (for examples see Hall, Baldwin, & Prendergast, 2001; Staton-Tindall et al., 2007). When all focus groups were completed, transcripts were merged and the overall content analysis was conducted. Key words were identified from each statement. These key words were then categorized into broader themes, and transcripts were re-evaluated using the identified themes. The following themes emerged from this analysis which focused on drug use, HCV, and service utilization. Summaries of the themes are presented, followed by quotes from focus group participants that provide interesting reflections.

Themes

Prescription pain medication predominant drugs of choice

Across each of the focus group, it was apparent that use and abuse of prescription opiates ("pain pills") was the primary drug of choice in the area. When asked about the typical drugs used in the region, immediate-release Oxycodone (commonly referred to as "roxies" or "IRs" or "30s") was mentioned most consistently. Other prescription drugs such as Xanax® and Valium® were also commonly abused, as well as non-prescribed pharmacotherapies such as Suboxone®. While not a primary theme, methamphetamine use was also mentioned as a commonly used substance.

Women's drug use is different than men's

A primary theme from the focus groups is that respondents believed that women used drugs for reasons that were different than men. One woman said, "*Women have it a whole lot harder than men do. Men have to physically get out there and do things, but the women have to stay in and raise the kids, and a lot of time the drugs overtake them"*. The reasons that women use drugs largely focused on relationships – either dealing with current or historically abusive relationships or attempting to be more connected in what were perceived as good relationships. A respondent summarized this theme, "[It] *Doesn't even have to be abusive, if it wasn't for my last boyfriend using, I might have still used, but I wouldn't have gotten like I was. It was because he was using and it was around me"*. While partner relationships were discussed most often, family relationships were also noted in that women sometimes use because they grow up in homes and rural communities where drug use is traditionally what they experienced – "*everyone used drugs*". Other important reasons for using drugs among women including dealing with negative emotions (such as grief) and just wanting to be numb by getting high (*I think some use to cope to things they've been through…like, rape or abuse).*

Injection drug use highly prevalent

When asked about "how" people are using drugs in the area, respondents indicated that shooting (injecting) drugs was the most common. They indicated that there had been a gradual increase in prevalence of injection drug use in recent years. There was a perception that "*everybody is doing it*" – even teenagers and people you wouldn't "*expect*" to inject, which is different than in past years. One respondent said, "*I mean it's like the plague. I mean people I never thought would do it are doing it, I mean everybody is doing it"*.

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Another respondent indicated, "*When we were growing up, you didn't see it. Only people in the alleys did it. Now, school kids, everybody. You don't know who you will be standing next to who's doing it*".

There was also a perception that one of the reasons for the gradual shift to injection use is that it provides a natural progression to a better high. Specifically, after people used orally for so long and no longer felt a high, they progressed to snorting and ultimately to injection use. One participant summarized it by saying, "*A lot of the people that I know, I think they were orally taking them [pain pills], and then it got to where doing it that way didn't help. It just got to where they wouldn't get as high, so it got to where they were snorting them. And then that didn't work. They wanted a faster high, so they started shooting*".

Injection drug use and HCV

Some drugs impact health more than others – such as methamphetamine and injection drug use, which has led to a perceived HCV epidemic. Respondents indicated that not only was drug use highly related to health problems in general, there was a unique relationship between injection drug use and contracting HCV. One respondent said, "*Oh yeah, Hep C is just like a plague around here. 9 times out of 10 around here you'll have it. It's not a big thing [laughter], 'oh hey, I got Hep'. I don't mean that in a negative way toward the area around here, it's just that the IV drug use is so heavy around here that when you have such common IV drug use, hepatitis just comes with it.*" The general consensus in every group was that everybody knew somebody that "*had HCV*". Another respondent said, "*You stick me and 9–10 of my closest friends in a room and I guarantee you that 9 of them will have hep C. And it ain't a big deal.*" Another respondent recognized other transmission risks for HCV - "*Because of needles. Just about everybody, the majority, has gone to needles. Which I didn't know you could get it [HCV] from straws, but hey. It's just not needles anymore; you can get it from anything anymore.*"

Recognition of the seriousness of the potential for long term consequences of HCV was limited, and it was apparent that few respondents had seen friends or family suffer with serious symptoms associated with HCV. One woman said, "*They don't fear it [*HCV*]because so many people's got it*". Another woman said, "*Somebody said the other day that it [*having HCV*] was like the common cold – right around here in this little town.*" Thus, based on the lackadaisical attitude toward the issue, the health symptoms and health consequences of HCV were largely unknown.

Drug use and HCV risks among women

Despite limited knowledge of the consequences of HCV, focus group respondents had some knowledge of the risk behaviors associated with the transmission of HCV including risky drug use and sharing drug injection equipment. A number of participants also mentioned prostitution and exchanging sex for drugs, money, or both. One respondent said, "*When you're getting high, who's lying next to you ain't important.*" Another respondent indicated that this behavior may be different in a rural area compared to urban areas, "*In rural areas, in areas like this, they sleep with people they know really really well. And they don't just*

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sleep with them once, they sleep with them numerous times, to get drugs, money for drugs, or whatever. So they are more apt to sleep with the same person multiple times."

In spite of understanding the risk behaviors, most participants indicated that women are most likely to ignore the risks associated with transmission of HCV when they are high and/or desperate to satisfy their addition. One woman said, "*People may look good that normally don't when you are 'right'. You sleep places you normally wouldn't sleep. You go places you normally wouldn't go."* Another woman said, "*A family member of mine doesn't have the access to the money and drugs that I have, so she ends up having to give up something in return. She knows how to find it – but she has to give up something, and that creates a more vulnerable situation for her. She's with men she doesn't even know."*

Another primary theme from the focus groups was that relationships with partners are particularly risky for drug use. Women in this study reported that they were involved with partners who had substance abuse problems and the relationship often perpetuated their own addiction ("*It [*substance use*] makes you toxic to each other").* One respondent describe her experience as, "*When I first got with my ex-boyfriend, he was trying to get clean – then I came along with my pills and here I was getting him high. So now, he's right back where he was. If you are trying to get clean – it's too hard to be together"*. Involvement in risky relationships also increases the likelihood of involvement in other risk behaviors including risky sex and risky needle use. Specifically, one respondent indicated, "[you are] *Less likely to use protection. When you are high you don't usually care. I guess especially if it's your boyfriend"*. Another respondent indicated, "*Using needles too. I can remember when I first started using needles I wouldn't share with anybody else – not even share the water – but I would share with him. I didn't know who he was using needles after but…"*.

Services are limited in rural areas

With the exception of drug court education programming, formal health services for substance abuse and/or HCV in the target communities are extremely limited. Respondents indicated that substance abuse services were available in a few places, but there were lengthy waiting lists and costly fees for the services. The majority of focus group respondents indicated that they were not aware of any services in the area for HCV. One woman said, "*Our health department doesn't even test for Hepatitis C. You have to go to a family doctor and get tested, which requires insurance."* Another woman said, *"It's hard to go get checked for it [*HCV*], little alone get treated for it. You know what I mean? Especially if you don't have insurance.* Most indicated that this was problematic given the high prevalence rates of HCV in the area already and the number of people who were continuing to inject drugs. One respondent said, "*It's a really big problem, there is a lot of untreated hepatitis out there. I don't think it's because there are people out there saying I've got hepatitis I'm gonna give it away, I don't think they know where to go or what to do. There's a big misconception that it's just going to go away. And that's not true."* Another respondent indicated, "*As a drug addict, you would like to think, you know if you go down to your local health department, if you are a junkie at least you could get you a clean needle. They give you a condom, all day long. But I'm sure they don't hand out needles."*

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Discussion

This study provides an exploratory, qualitative examination of health factors highly associated with service utilization including drug use, hepatitis C, and service availability among a high-risk sample of rural drug-using women serving time in jails. The research literature, even among criminal justice samples, is limited for jail populations (Malouf, Stuewig, & Tangney, 2012; Meyer, Tangney, Stuewig, & Moore, 2013); yet jails provide ideal venues to examine the health risk behavior of vulnerable, high-risk populations, particularly in rural areas due to high turnover rates of offenders and limited services. This study utilized focus groups to better understand the perspectives of rural women of community drug use, the impact of drug use on health, and availability of services.

Study findings indicated that prescription drugs are the predominant substances of choice in the rural communities of Appalachia targeted for this project. “Roxies” or “IR-30s”, slang terms for immediate release Oxycodone, were the common favorites. This finding was not surprising and is consistent with both empirical research (e.g., Winstanley, et al., 2012; Havens, Oser, & Leukefeld, 2007) and with anecdotal information (e.g., Adams, 2013; Tavernise, 2011) on the epidemic of prescription drug misuse in the US, particularly in Appalachia. In fact, one news source reported that prescription drug abuse was attributed to more deaths in 2010 than cocaine and heroin combined (Adams, 2013). While not a major study theme, participants also indicated that methamphetamine (“meth”) was also commonly used. Thus, it is important to note for future research to see if specific drugs of choice have an impact on health and health-related risk behaviors.

Another study finding is that respondents in this sample indicated that drug use, and the related consequences, were different for women than for men. Specifically, women believed that the influence of the partner relationship and/or the family relationship was significant in their decisions to use drugs and to sustain the drug-related lifestyle. This is consistent with other studies which have reported that among female drug users, episodes of use, abstinence, and relapse are closely related to their significant family, partner, and peer relationships (Hall & Skinner, 2012; Staton-Tindall et al., 2007). Rural women in this study also noted that drug use was closely tied to mental health issues such as dealing with grief and/or coping with histories of abuse and trauma, which has also been reported in other studies (Hall & Skinner, 2012). Reasons for initiating and sustained drug use are important considerations for treatment providers working with women in correctional and community agencies.

Study findings indicated that injection drug use is the most prevalent route of administration of drugs, particularly prescription opiates. Participants indicated that there is a natural progression from taking pills orally to snorting to injecting when the high is no longer maintained.. While studies focusing specifically on rural injectors are limited, research has shown that non-oral abuse (either snorting or injecting) is independently correlated with longer duration of use and being from a rural area (Kirsh, Peppin, & Coleman, 2012; Novak & Kral, 2011). Among rural opiate users, the rates of injection drug use have been reported in the past decade from 44.3% (Havens, Walker, & Leukefeld, 2007) to 78.3% (Young & Havens, 2012). However, it is possible that among the criminal justice population, rates

could be even higher. This is also a direction for future research considering the substantial health consequences associated with injection drug use.

Respondents in this study felt strongly that injection drug use was highly associated with HCV, which is consistent with other studies (Evans, et al., 2003; Lelutiu-Weinberger et al., 2009). However, the perceived prevalence of HCV among rural drug users is troubling. With phrases like "*common as a cold*" and "*9 out of 10 people have it*", the perception among these rural women drug users is that HCV is an epidemic in their communities. Perhaps equally disturbing as the high prevalence of HCV is the lack of concern for the symptoms and long-term consequences of the virus among these high-risk women. It is possible that the health literacy for the course of HCV infection is so low in this impoverished area that the long-term consequences are just simply not well understood. Increasing health literacy for HCV in this area, as well as interventions to reduce both primary and secondary risk behaviors, should be critical public health research priorities for this population.

These study findings also indicate that drug use strongly affects HCV risk behavior for women, and that risk behavior can be affected by their intimate partner relationships. Women in this sample had some knowledge of the risk behaviors associated with HCV transmission including risky drug use (e.g., sharing of drug injection equipment) and risky sexual activity (e.g., sex without condoms, sex with risky partners who inject drugs). They also indicated that women are most likely to engage in these behaviors when they are under the influence of drugs or attempting to obtain drugs to sustain their addiction. Partner relationships can intensify this drug use and risky sex pattern, particularly if the partner is also using drugs and engaged in a risky (including injection drug use) lifestyle. These findings are consistent with other research among urban women prisoners which suggested that partner relationships can increase risky drug use and sexual behavior (Staton-Tindall et al., 2007). This should be an area for future research for the implementation of gender-specific interventions which are adapted for HCV risk among rural women.

Despite the rates of drug use and related health risk behavior among women in this study, the perception of women in this sample was that there was a dearth of available services for substance use and HCV. Most respondents could not identify any locations in their area that provided HCV testing and/or services for those who were positive, other than private physicians (which required health insurance). In addition, the limited number of substance abuse services had long waiting lists and required extensive fees, neither of which were feasible for the majority of substance users in the area. The finding that the substance use need is high but services are limited is not surprising and has been reported elsewhere (Staton-Tindall, et al., 2007; MacMaster, 2013). However, it does suggest that a model of health services utilization among rural women must include critical elements such as availability and accessibility such as proposed by Penchansky and Thomas (1981). In the absence of these available and accessible services, the rural jail may provide an opportunity to "sober up" and return to the street where relapse and/or overdose is a significant risk. Thus, jails provide a valuable and often untapped opportunity to provide drug abuse and related health interventions to this high-risk population.

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This study has limitations. Themes were developed from a small sample of incarcerated female substance abusers from rural jails in one Appalachian state. While the sample was randomly selected, the sampling frame may still limit generalizability to other samples of female offenders and substance users. In addition, there is a potential response bias with the focus group setting in the jail and audio-taping, even though confidentiality was assured and maintained. Correctional officers were not present during group sessions and no identifying information was collected in order to increase confidentiality. In addition, focus group themes closely paralleled the questions, so there may be other themes related to health problems associated with drug use which did not emerge.

Despite these limitations, this study has important public health implications for social workers in correctional and community agencies. Findings from this study support other research suggesting that prescription drug misuse is prevalent in this impoverished area of the country, and that the primary route of administration of drug use is injection. Findings also indicate that injection drug use is highly associated with HCV transmission, which is perceived to be prevalent in the area. Women, in particular, are at risk for HCV when they are addicted to drugs and involved in relationships with addicted partners – both of which increase their likelihood of engaging in risk behaviors associated with HCV. Despite knowledge of risks associated with HCV, women in this sample were seemingly apathetic toward the long-term consequences of the course of HCV. In addition, the perception of limited service availability is concerning considering the extent of high-risk drug use and health risk behavior in the area. Implications for future research and practice include a focus on intervention development to both increase health literacy about HCV, as well as gender-specific interventions that can be delivered in non-traditional treatment venues to reduce risk behaviors specific to drug use, injection drug use, and risky sexual activity.

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Biographies

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Carrie Oser, Ph.D. is an Associate Professor in the Department of Sociology with an appointment in the Center on Drug and Alcohol Research and the College of Medicine's Department of Behavioral Science at the University of Kentucky. Dr. Oser is the Principal Investigator or Co-Principal Investigator on four National Institute on Drug Abuse (NIDA) supported research projects and serves as a mentor on three NIDA training grants. Dr. Oser has published over 60 articles in peer-reviewed journals on topics including health services, health disparities, HIV risk behaviors/interventions, as well as substance abuse among either rural, minority, and/or criminal justice populations.

Jennifer R. Havens, Ph.D., is an Associate Professor in the Department of Behavioral Science with an appointment in the Center on Drug and Alcohol Research. Dr. Havens is the PI for a NIH/NIDA R01 study examining social networks and HIV risk among rural drug users, as well as a new NIDA R01 examining the effectiveness of an ADF in reducing opioid abuse. She also recently conducted a pilot study on the feasibility of implementing an HIV vaccine among high-risk drug users in Appalachia. She has taught "Fundamentals of Biostatistics for Clinical and Translational Research" for medical students, as well as served as a small group preceptor for the Introduction to Clinical Medicine course. Her primary research interests include the epidemiology of prescription opioid abuse in rural Appalachia, the comorbidity of substance and mental disorders, and HIV and other infectious complications of drug use.

Carl G. Leukefeld, D.S.W., is Professor and Chair of the Department of Behavioral Science and founding Director of the Center on Drug and Alcohol Research at the University of Kentucky. He is also the Bell Alcohol and Addictions Endowed Chair. He came to the University of Kentucky in 1990 to establish the Center on Drug and Alcohol Research from the National Institute on Drug Abuse (NIDA) where he filled administrative and research positions. He was also the Chief Health Services Officer of the United States Public Health Service. Dr. Leukefeld has published over 200 articles, chapters, books and monographs. He has taught the undergraduate Alcohol and Problem Drinking Course, the Dependency Behavior graduate course, and the Introduction to Clinical Medicine course for medical students. His research interests include treatment interventions, HIV prevention, criminal justice sanctions, and health services

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