

“It Fucks Your Insides Up”: The Effects of Australian Urban Women’s Opioid Use on Their Sexual & Reproductive Functioning

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City life has long been associated with the dangers of consumption. Here we focus on the consumption of opioids by Australian urban women and its effects on their sexual and reproductive functioning. We interviewed 109 Australian women with HCV (Hepatitis C) from two urban centres about contraception and their sexual and reproductive health needs. These interviews alerted us to a potential health consequence of drug use that appears to be under-researched: it appears that opioid use may reduce women’s estrogen levels which in turn has consequences for their health more broadly. Here, we bring together qualitative evidence from interviews with women opioid users and from research literature to argue that women’s opioid use may reduce their estrogen levels and lead to serious health consequences. At present, however, we are unaware of research that has empirically tested this proposition. This research urgently needs to be conducted, and if our theory is supported then treatment protocols and services for opioid-using women should be modified accordingly.

Drug consumption, such as opioid use, and its sequelae are but one form of the hyper-consumption and ill-health that cities spawn. This paper loosely follows what Rhodes and others (2005) call the “interplay” among micro, meso, and macro factors that shape health risk environments. Cities provide the macro environment in which factors such as discrimination and economic disadvantage operate. Increasingly, place and space are recognized as important elements in understanding risk environments (Bryant, 2005; Tempalski & McQuie, 2009). However, this paper is also concerned at the micro level with women’s hormonal response to opioids and at the meso level with how sexual and reproductive consequences play out for them in social environments.

The research was conducted in two Australian cities. Canberra, the Australian capital, has a population of 340,000. Despite its high average income due to the preponderance of public servants and university staff, it contains pockets of social and economic disadvantage. Melbourne has a population of over three million and contains extremes of wealth and poverty. An extensive literature review and the interviews we conducted with women who use opioids alerted us to a potential health consequence of drug use that appears to be under-researched: the effects of opioid use appears to reduce women’s estrogen levels. We examine some of the possible health consequences, especially for urban women with Hepatitis C Virus (HCV). Furthermore, as we illustrate, women connect their experiences across the micro, macro and meso levels when they discuss how their reproductive and sexual functioning interacts with the social and economic features of their lives. These health problems are contextualized by their social marginalization and (dis)location within cities.

Cities & Consumption

As long ago as the first century AD, the poet Juvenal argued that the city of Rome was overcrowded, unhealthy, dangerous, and a hotbed of competitive consumption (Juvenal, 1974). His poems have set the tone for subsequent theories and visions of cities. For many centuries since, urban environments have been acknowledged as a source of poor health and overconsumption. While modern cities produce financial and human capital, they are overwhelmingly sites of market-based consumption. This second function has gradually evolved through economic differentiation and

specialization, made possible by the combination of a diverse population, flexible production systems, and a culturally-attuned advertising industry.

As Juvenal also noted, cities attract diverse populations into compact areas. They have long provided a magnet for young people, the destitute, and the rich and powerful through the lure of employment, possibilities for making money and the array of goods to spend it on, and the sexual and other pleasures to be had in relative anonymity. Their notoriety has only contributed to their attraction.

In-migration to cities of young, educated, and prosperous individuals and families, drawn in part by consumption possibilities, and the outmigration of poorer groups mean that, relative to rural areas, cities are increasingly affluent centres, but nonetheless characterized by real and visible social stratification.

As we have noted, cities are sites of consumption and, more recently, hyper-consumption, in which the pace, amount and emotional intensity of consumption has been increasing. Some groups benefit financially more than others from the offerings of hyper-consumption. In the case of commodities that shape health, such as alcohol, tobacco, illicit drugs, or fast food, hyper-consumption leads to ill-health for some groups. Where these health outcomes are debilitating, they feed back into social and economic inequalities.

Illicit Drug Consumption

Cities perform another function. They were identified by Tarde (1903) as sources of imitation, in other words, as the sites of superiority from which imitations stem. According to Borch's reading of Tarde, cities are "the breeding ground and engine for both inventions and their imitations" (2005) because of the social processes described above.

In the 20th century, Tarde's theory of imitation, which draws on his view of the superiority of cities, has evolved to become the foundation of the theory of diffusion of innovation. Ferrence (2001) argues that the spread of illicit drug use, including that of heroin and marijuana, demonstrates a natural diffusion in which drug use begins in innovative, hypo-consumptive urban centres and spreads rapidly through networks of friends and peers encouraged by the density of urban populations and further supported by the media. Drugs are pre-eminently suitable for hyper-consumption, since they are, as Courtwright (2001, p. 91) noted, "baited with pleasure," and their use, which may increase with tolerance, sometimes rapidly becomes an addiction. They are promoted by those who profit by their manufacture and distribution, while other factors such as their cost and availability and the culture and values of potential users encourage their consumption. Thus the population density and innovative style of city life goes hand in hand with drug use.

As we have argued elsewhere (Dixon & Banwell, ND), the consumption of goods, including drugs, that signal social, economic, and class distinctions often becomes habitual over time among the less powerful and less wealthy members of society. This theory, first proposed by Lopez and others (1994) about smoking and later supported by Mackenback (2006), suggests that smoking begins among the most powerful group, men of high socio-economic status (SES), before becoming common among all socio-economic groups. This theory suggests that as the rich and powerful move on to other pleasurable commodities, women and young people and the urban and rural poor adopt and retain these habits for much longer and with greater ill-health effects. We suggest that this occurs with other risky consumptions. For example, despite higher SES groups consume illicit drugs at higher risk levels, Australian burden of disease data from 1999 show that low SES men and women are at greater risk of years of life lost due to disability from their consumption of these particular commodities (Mathers, Vos & Stevenson, 1999, p. 59).

From a cultural perspective this finding is of little surprise. Commodities are rarely inherently dangerous, but their excessive consumption is dangerous, and so are the hazardous contexts in which they are consumed. Low SES users are more exposed to disability and injury because of how and where they consume. They have less access to the purer forms of the drugs,

safe equipment, safe injecting spaces, or the care required to deal with any consequences.

Thus, drug use and harm reflect socio-structural environments and the existing social and economic marginalisation existing within them, but even more importantly they contribute to marginalisation. Within American cities, areas of concentrated poverty, often specific neighbourhoods, show an excess of morbidity and mortality that are associated with infectious diseases such as tuberculosis, HIV, and sexually transmitted infections (Vlahov & Gibble, 2006). While not wishing to detract from women's agency, we note that women are often more vulnerable to poverty and other gendered social and structural determinants of health. For example, in Canada, rising housing costs in major cities have increased the vulnerability of low-income women and children (Bryant, 2005). Within Australian urban environments, this marginalisation is manifested as poverty, food and housing insecurity, ill-health, and lack of family and other social supports for opioid and other drug-using women (Yeats, 2008). However, just as urban environments promote drug consumption and attract ready consumers, the spread of drug use and users may lead to the development of services.

Opioid Use & Female Sex Hormones

We now turn to the micro level health consequences of opioid use. In this study, we explored why few women with HCV used contraception (see Banwell et al., 2003) even though many were of child-producing age. HCV is particularly prevalent among Australian injecting drug users: between 50% and 70% are HCV- antibody positive (NCHECR, 2006). The proportion of injecting drug users who are female and living with HCV was around 30% in South West Sydney between 1999 to 2002 (Maher et al., 2004) and rose to about 50% in 2005 (NCHECR, 2006). Between 1999 and 2003, HCV increased most rapidly among young women aged 15-19 years (NCHECR, 2006). We will now address the literature on interactions among opioid use, female sex hormones, and HCV, before illustrating how women experience these interactions and how they affect women's reproductive and sexual functioning and the social and economic features of their lives.

Over the last few decades, sporadic research interest, concentrating mainly on men, has been paid to drug use and sexual functioning. In the early 1980s, a literature review on drugs and sexual behaviour reported that opioid use reduces sexual activity (Abel, 1984). Both endogenous opioids produced by the body itself and exogenous opioids are associated with decreased libido and sexual dysfunction in human and animal models (Abel, 1984; Pfau & Gorzalka, 1987). Women were excluded from most of these investigations, but the few studies conducted with small samples of female heroin users in the 1960s and 1970s reported amenorrhea (loss of menstrual periods) in 60% to 70% of women. This occurred anywhere from 2 months to over one year after opioid use commenced, and menstruation resumed within a few months to a year once opioid use ceased (Abel, 1984). A more recent review, which examined the effects of the menstrual cycle on drug responses, found only two studies that included opioids and they were both concerned with women treated for pain relief (Turner & de Wit, 2006).

Methadone (a synthetic opioid) is associated with fewer menstrual disorders in women than is heroin (Abel, 1984; Schmittner et al., 2005), yet women using methadone still have more persistent amenorrhea than non-opioid-using women. Methadone is still considered potent enough to cause hypogonadism (often defined as lack of function in the gonads, i.e., testes or ovaries) in men (Cicero et al., 1975). Buprenorphine, a partial opioid agonist, is a new treatment for heroin dependence. The only study examining its effects on sex hormones found it less disruptive to men than methadone (Bliesener et al., 2005).

The relationship between sexual functioning and opioid use is not only a matter of self-report and perception. Clinical research provides evidence of the mechanism by which opioids disrupt the function of the pituitary-gonadal axis. In brief, central (or secondary) hypogonadism can result from opiate receptor activation in or near the hypothalamus (Cooper, Brown & Dobs, 2003). This clinical evidence is further supported by research showing that opioid antagonists, which block the effects of opiates on the system, improve sexual function in humans and animal

models (Pfaus & Gorzalka, 1987).

The measurement of serum estrogen in women is used as an indicator of the functioning of their ovaries, with low levels linked to amenorrhea. In a sample of 21 pre-menopausal women receiving spinal injection of opioids for the management of non-malignant pain, two-thirds became amenorrheic and seven developed an irregular menstrual cycle. The recorded hormonal levels were considerably lower than those of the pre-menopausal controls (Abs et al., 2000). Similarly in another sample of patients receiving opioids for pain treatment, women became “menopausal soon after beginning substantial opioid use and had become osteoporotic before age 40 years” (Daniell, 2004). Thus these two studies of opioid administration for pain relief demonstrate that opioids interrupt the menstrual cycle and initiate menopausal-like symptoms.

Despite consistent findings that opioids disturb pituitary-gonadal function, no studies have considered the strength of the association or its prevalence among women using illicit drugs or being treated with opioids for illicit drug use in Australia. An American study of intravenous drug users found a 43% reduction in oestradiol levels in women who reported active but unspecified injection drug use in the preceding six months, although women with abnormal menstrual periods (i.e., those most likely to be affected) were excluded (Cofrancesco et al., 2006).

Much research and treatment has been devoted to assisting older women who do not use drugs to manage symptoms of menopause and the increased risk of osteoporosis, while young women with conditions such as Turner Syndrome or anorexia that produce hormonal disruptions and amenorrhea are frequently monitored and advised to take estrogen therapy to reduce the risk of osteoporosis (Legroux-Gerot et al., 2005). Opioid-using women, like anorexic women, may experience malnutrition which can contribute these health problems (Legroux-Gerot et al., 2005). There is evidence to suggest that opioids may also directly interfere with bone formation by affecting osteoblasts (Daniell, 2004).

As we have already noted, many Australian women who use opioids have HCV. Female estrogen levels affect the progress of the HCV and vice versa. Hormonal contraception is contraindicated as it may impair liver function in women with established HCV (Holmes, 1996; Mazza, 1998), although this is not a uniform recommendation. More recent research suggests that HCV is less severe in menstruating women than in men or postmenopausal women (Sartori et al., 2000) and that exposure to estrogen slows the progression to liver fibrosis (Di Martino et al., 2004). In a case-control study, risk of Hepatocellular Carcinoma (HCC) was inversely related to the number of full-term pregnancies and age at natural menopause, while use of hormone replacement therapy has been shown to slow the progress of liver fibrosis in menopausal women (Di Martino et al., 2004) and is associated with a lower risk of liver cancer (Yu et al., 2003). It is postulated that the protective effects of sex hormones may occur because estrogens suppress tumours (Yu et al., 2003) and that the relative iron deficiency observed in menstruating women is also protective (Rigamonti et al., 2005). Such research suggests that women with HCV who use opioids may be deprived of the protective effects of estrogen.

METHODS

We conducted in-depth, semi-structured interviews with women with HCV about their contraceptive and reproductive histories. Our interest was in the connections women saw, if any, among their HCV status and their sex lives, relationships, contraception, and child-bearing. This approach reflected the seriousness we attach to the experiences of women living with HCV whose complex and emotionally charged contraceptive and reproductive histories are often ignored.

During 2005 and 2006, 109 women from Canberra and Melbourne who were living with HCV were interviewed. We employed a purposive sampling recruitment strategy via community organizations (such as HCV councils and peer-based organizations for people who inject drugs), drug treatment services, and health clinics. Women were given a consent form to read and they then provided verbal consent. Participants received \$20.00 for their time and expenses (see Olsen, et al., 2009 in press for details). Ethics clearance was obtained from The Australian National University's Human Ethics Committee, and the research itself was funded by a grant from the National Health and Medical Research Council of Australia.

A brief, standardized set of questions was used to collect socio-demographic data and a theme list prompted open-ended questions on past and current contraceptive experiences, reproductive and sexual health, current living arrangements, and future plans. To assist with structuring their narratives, participants were asked to map their illicit drug use, HCV, contraceptive and reproductive histories on a timeline. We (the research team) balanced this structure by encouraging participants to be flexible in their narration.

The interviews were digitally recorded and professionally transcribed. We communicated frequently with each other throughout the interviewing process, reflecting on both the conduct and content of interviews, and generating ideas for use in further interviews. Based on this process, we jointly constructed a list of code words that we applied to all the interviews, although we also looked for differences between the Melbourne and Canberra interviews. Atlas.ti (Muhr & Friese, 2004) was used to assist in the management of data and allowed us to share coded data easily. We developed a list of recurrent themes representing the contexts and practices concerned with contraception, HCV, and drug use.

During the research we also conducted a number of informal, unrecorded but noted discussions about the research with service providers (general practitioners and agency staff) in which we considered our developing insights.

FINDINGS

Generally, the women in this study who used opioids were among the socially excluded for whom injecting drugs had in the past or still did offer some comfort or relief from their problems. Many had low levels of education, employment, and income (TABLE 1). Their car and house ownership was also low, indicating their comparative disadvantage in Australia, which has high ownership rates for both. Many reported unstable housing situations and frequent moves to new dwellings. A high proportion of women had used illicit drugs in the previous 12 months. Many but not all believed they had contracted HCV through injecting. The reported levels of contraceptive use were 34% for Canberra and 53% for Melbourne women.

Table I: Participants' Socio-demographic Characteristics

	Canberra		Melbourne	
	N = 64		N = 45	
Age in years	Range	Mean	Range	Mean
	19-61	34	16-57	36
	N = 64	%	N = 45	%
Aboriginal and/or Torres Strait Islander	6	9	3	7
Born in Australia	59	92	41	91
Education				
Attended tertiary education	8	13	10	22
Completed Yr 11+12	19	30	11	25
Less than Year 11 education	36	56	23	51
Employment				
Employed part-time, full-time, casual	16	25	8	17
Relationship status				
Single, separated, widowed, divorced	33	52	17	38
In a relationship, de facto, long-term boyfriend	27	44	26	62
Married	4	6	6	13
Household Income				
<\$20,000	48	75	32	71
\$21-40,000	10	16	7	16
\$41-70,000	6	10	2	5
Assets				
Receiving benefits	58	91	37	82
Owns a car	15	23	23	51
Owns a home	6	9	10	22
Children				
Number of women with at least one child	49	77	34	76
Current partner father of some/all of children	9	14	6	13
Current partner not father of children	14	22	16	36
Justice System				
Ever remanded in custody or jailed	22	35	14	31
Current contraception (excludes withdrawal and rhythm) includes tubal ligation, condoms pill, implant & partner's vasectomy	22	34	24	53
Current drug use (last 12 months)	57	89	28	62

More Canberra than Melbourne women received government assistance and were using drugs, while fewer had attended tertiary training, were in a relationship, or were using contraception. These differences may reflect differences in recruitment sites. In Melbourne, women were recruited from community health centres and services for drug-users, while Canberra women came mainly from the latter.

Opioid Use & Sexual Drive

In this paper we concentrate on the women in the study who used opioids, a class of drugs with morphine-like effects that interact with opioid receptors. They include illegal drugs such as heroin, legal drugs commonly prescribed for pain relief, and opioids such as methadone and buprenorphine, which are two of the major treatment options for heroin addiction in Australia, with patients sometimes maintained on this regime for many years. Women participating in this study mainly injected heroin, amphetamines, and street methadone, with many also enrolled in a methadone maintenance program.

Many women observed that heroin and methadone use had a negative impact on their sexual functioning. They described having little or no desire for sex and they sometimes said that their partners were also disinclined. As Jenny, a Melbourne woman, commented:

I don't know if you know many drug users—heroin users especially, they don't have very high sex drive. It was really a big issue [in my relationship] (Interview 17).

While Sue, a Canberra woman, explained:

I mean, that [methadone] in itself reduces your libido and with what's going on in our lives, I mean, it's really hard to feel sexy, you know (laughs). Just to be quite blunt, I didn't know how else to say it, but, you know, that's the truth of it (Interviews 59& 60).

Jenny from Melbourne raised the topic of drug relationships. While such relationships do not preclude sexual relations and may well have been initiated by sexual desire and attraction, intimacy was located predominantly in sharing drugs rather than sex. She explained:

I had a lot of different guys but didn't really have sex with them. Maybe once - they were all drug-based relationships (Interview 17).

Others have described the way in which relationships become bound up in drug use, sometimes to the exclusion of sexual or other activities. The relationship is sometimes unable to withstand attempts to decrease drug use (Rhodes & Quirk, 1998).

Some women accepted a lack of sexual drive as an unintended and even unimportant consequence of heroin use, but for others, such as Fran, a former heroin user from Canberra, heroin was employed quite actively as a form of contraception. She explains:

I started using heroin after I got it [implant] taken out. Because when you use heroin it fucks your insides up (Interview 2).

When we explored the idea that heroin use negated the need for contraception, she added a psychological to the physiological reason: “Plus I weren't having sex; I was just too busy worrying about heroin.” This observation was shared widely, with other women stating that they were too focused on drug or alcohol use to pay attention to sex.

Other Influences on Sexual Desire

While we concentrate here on the influence of opioid use on women's sexual and hormonal health, it is noteworthy that women participants did not attribute their lack of interest in sex to drug use alone. Other issues also clouded their feelings about sexual relations. Some women were deterred from starting new sexual relationships because they feared disclosing their HCV status. In Australia, the medical fraternity and HCV advocacy groups do not consider that the virus is sexually transmitted, although it is acknowledged that it can be transmitted if blood to blood contact occurs during sexual activity. Nevertheless, women occasionally reported that they firmly believed that they had contracted HCV through sexual activity. Furthermore, the fear that they might transmit HCV in the same manner was a deterrent to engaging in sex, as this Canberra woman explains. Although her partner had cleared HCV, she was concerned that she might re-infect him with another strain.

It does particularly because [partner] has been through the treatment and doesn't want to be reinfected, so, yeah, it's sort of a little bit of an issue sometimes. Because, I don't want to be responsible for reinfected him either (Interview 50).

HCV infection itself sometimes contributed to women's low sexual drive. They acknowledged that it sometimes made them feel sick, tired, lethargic or uninterested in sex. One Canberra woman noted that it had an impact on her sexual relationship because “you are more down and more lethargic” (Interview 56). These symptoms are quite commonly reported by women living with HCV (Gifford et al., 2003).

The research literature argues that women exposed to sexual abuse, particularly during childhood, are at greater risk of problems with alcohol and other drugs (Wilsnack et al., 1997).

A number of women in this study had strong negative feelings about sexual activity and relationships because they had been raped or sexually abused as children or adults. Sometimes their dislike of sex stemmed from their experiences as sex workers. Robyn, from Melbourne, who stated that she “didn’t have one sexual bone in my body” cited a host of experiences which she said had destroyed her relationship with a partner.

I don’t give a fuck if I am alone for the rest of my life. I think I have just wrecked myself by growing up at my mum’s and then growing up in institutions and then jail with a single bed. So imagine, I just love single beds. I can’t stand double beds. Everyone said they were better. I wouldn’t sleep in them. Then they would want to touch me and I would go oh God, I want to fuck the bastard, you know, but maybe there is an infection in my brain, I hate it [sex], even when it comes on TV I go out and I walk out of the room. Not because I think it is rude, you know, I grew up with sex around me when I was a prostitute at 11 years old, you know, having sex and that. A fucking lot of things happened then too which wrecked my sex life too, you know (Interview 6).

However, Fran from Canberra acknowledged that previous experience as a sex worker had given her confidence in sexual matters. Current and previous sex workers we interviewed demonstrated considerable knowledge regarding safer sex practices.

The knowledge that opioid use reduces sexual desire and performance appears to circulate among women users as a form of often tacit street knowledge, but they also recognized that social factors could play a role. They explained to us that there were too many other things going on in their lives to bother about sex or contraceptive use. These “other things” included homelessness, debt, difficulties in managing drug habits, ill health, unemployment, child custody battles, and so on. These major difficulties pushed concerns about sexual and reproductive health issues and even HCV to the bottom of women’s list of priorities in the day-to-day battle for survival. In the process, they acknowledged their social decline. As Carol, a middle-aged ex-user from Melbourne put it:

With hep c you let go of the healthy life ambitions and before you know it you have slipped into the under class, you are not even the working class any more.

Menstruation & Menopause

One of the explanations that women who use opioids offer for their lower levels of contraceptive use is that they often experience disrupted periods and therefore do not consider themselves to be fertile. As one woman in this study explained:

I was on the methadone programme last year for 10 months and I didn’t get a period then. I thought that was a form of contraception but I was mistaken.

However, lack of a period does not necessarily mean that a woman is unable to become pregnant. Barbara, an older ex-user said:

I think if I was getting a regular period, I would have used contraception, I think. So because I didn’t have my period as I said, I think I just said, well, I’m safe.

The research literature over the years has noted that menstrual irregularities and cessation of menstruation are common among opioid-using women. Women in our study listed a number of menstrual problems including having no periods at all, very irregular periods, extremely heavy bleeding, and symptoms of early menopause. When we questioned them about these symptoms they often provided several explanations that included their heroin or methadone use, becoming pregnant, having children, breastfeeding children, starting and stopping various forms of contraception, and having a hysterectomy. As many of these situations co-occurred in their lives it was difficult for them to identify the primary cause, but the role of heroin and methadone use remained a common explanation. Penny, a younger woman, told us:

Like I'd been such a full-time junky user and smoking pot and all that stuff and I'd always been told by people - well, actually I knew a lot of women that weren't capable of having children, but they'd have histories in drugs. Like most people I knew did have a history in drugs, so I suppose that much I have just construed in my head that I won't be able to have kids and stuff.

However, it is important to acknowledge that not all women we talked to who were taking opioids experienced menstrual irregularities.

Several women in the study were in their forties or early fifties. One of these women thought that she had experienced an unusually early menopause. Other women reported experiencing menopausal type symptoms, such as night sweats, hot flashes, dizziness, and a range of other vague but uncomfortable symptoms. As we noted in a paper from an earlier study, women did not know whether these symptoms were attributable to their HCV or their opioid (mainly methadone) drug use (Banwell, 2003). Such reports of menopausal type symptoms are common among women on methadone, who also complain of rotting teeth, crumbling bones, heavy sweating, constipation, weight gain, and feeling tired and lethargic, among many others (Rosenbaum & Murphy, 1987). These symptoms are sometimes dismissed as street myths or as minor side effects that are outweighed by the benefits of methadone treatment. They are not, however, usually considered symptoms of hormonal irregularities.

Reproduction Functioning & Contraception

Women frequently employed condoms to protect themselves against sexually transmitted infections, particularly during casual sex or new relationships. However, they were less often concerned about preventing pregnancies. Some, including women who were menstruating, believed that their drug use made them infertile, at least temporarily. Indeed, some women with otherwise impeccable logic argued that their many years of unprotected sex without a pregnancy meant that they had no need of contraception. Furthermore, many understood that their drug-using partners who were not very sexually active were also infertile.

Some women who believed that opioid use threatened their fertility wished to protect their reproductive health by not exposing themselves to what they described as the “unnatural chemicals” in hormonal contraception. This view is frequently held by non-opioid-using women, who refuse hormonal contraception because of its perceived unnaturalness and threat to fertility (Keogh, 2005). However, this position on hormonal contraception, may signal attempts by women using opioids to exert control over their health and their often rather unmanageable bodies.

Contrasting somewhat with these accounts of low fertility and a reduced need for contraception were the many stories of women's unwanted pregnancies which concluded either in a termination or the birth of an unplanned child. With incomplete collection of data on termination in Australia it is difficult to determine how common they are, although a national survey reported that 22% of all women had a termination and among 20-29 year olds it was 34% (Smith et al., 2003). Researchers elsewhere have noted that women opioid users experience high numbers of unintended pregnancies (Weber et al., 2003), which suggests that they are not infertile. Indeed, it has been argued that they confuse amenorrhea with infertility, whereas amenorrhea signifies reduced fertility (Ralph & Spigner, 1986).

DISCUSSION

Women's accounts of their sexual drive and their reproductive functioning, supported by research literature, point to the likelihood that women who use heroin, methadone, or buprenorphine may experience reduced levels of estrogen, and amenorrhea or menopausal-type symptoms. Some women in our study showed signs (irregular periods or amenorrhea, a low sex drive, and low fertility) that their estrogen levels are below normal for women of their age. Perhaps more tenuous but still worthy of consideration is a potential connection

between drug use and women's accounts of menopausal-like symptoms or early menopause and their descriptions of "crumbling bones" and poor dental health. The added complication of the relationship between HCV-progression and estrogen levels has not yet been thoroughly explored.

Interviews with participants and separate discussions with service providers suggest that the potential link to hormonal disruption is unfamiliar to women who use opioids because they often do not discuss their symptoms with medical practitioners or other service providers. Thus their menopausal-like symptoms may go unrecognized by them and by health service providers. It is recognized in the medical literature that menopausal women report distress caused by these symptoms (Dennerstein et al., 2007) but the greatest medical concern focuses on the increased risk of osteoporosis and crippling bone fractures (Legroux-Gerot et al., 2005). While research indicates that opioid use may decrease estrogen levels in women under 50, we know of no studies that have examined these factors together with the measurement of estrogen levels in women who have used street heroin, methadone, or buprenorphine over a long term. While methadone appears to have less effect than street heroin, women are potentially exposed to it for long periods of time, sometimes commencing treatment in their late teens or early twenties and remaining on it indefinitely.

Given the potential health implications of this research for women, it is interesting to speculate on why it has not received more attention. In the flurry of research in the 1970s and 1980s on heroin use and sexual dysfunction, women's sexual drive and sexual functioning did not provoke the same degree of research interest as men's. As feminist theorists have noted, the male body is understood as the unproblematic norm and women's bodies are often paid scant attention except that they are considered less healthy or inferior. Where sex is concerned, the norm is the male orgasm, towards which sexual activity is generally directed (Potts et al., 2004). The explosive growth of Viagra sales illustrates the importance placed on maintaining male sex drive and male sexual performance as intrinsic to masculinity, while women's sexual organs and performance have either been viewed negatively, considered responsible for women's hysterias, or seen as unimportant (Potts et al., 2004; Teifer, 1994).

Research interest in sexual functioning and opioids waned in the late 1980s but increased again after the discovery of HIV/AIDS. This new research arena included women drug-users, but mainly as vectors of sexually transmissible infections, and focused on their sexual risk-taking and condom use. Furthermore, relatively little is known about the variability in drug interactions across the menstrual cycle (Turner & de Wit, 2006). Research is considered difficult because of the variability of women's sexual and reproductive processes, the changes in hormone levels that occur over their monthly cycles, and the uncertainties introduced by pregnancy and lactation. fluidity

The invisibility of women opioid users within the medical system and the distrust with which they are treated have discouraged interest in their specific reproductive issues. Discrimination and marginalization of women with HCV by health professionals is common in Australia (Anti-discrimination board of NSW, 2001) and is mainly due to the association of HCV with injecting drug use. Women who use opioids may therefore avoid medical practitioners if they perceive them to be unsympathetic, particularly if they themselves consider their health and reproductive issues to be relatively minor, which is often the case when they are dealing with housing, legal, or other crises. Despite a publicly funded health care system in Australia, the cost of medical services is often a deterrent. Medical and other health professionals may treat women as irresponsible or uninterested in their own health and therefore not worthy of intervention, or as unfit mothers and therefore not worthy to reproduce. Such views discourage women opioid users from seeking medical assistance for their menstrual irregularities. This lack of medical attention has meant that they continue to believe themselves to be infertile and as a consequence some experience unintended pregnancies, resulting in childbirth or terminations.

Little acknowledgement is given by many health professionals to what Bryant (2005, p. 85) terms the "social determinants of health" in women's lives, such as poverty, concerns about

children, and housing insecurity. These challenges make it difficult for women to take action on issues such as HCV, which they frequently consider to be ubiquitous and untreatable, or on sexual and reproductive health issues which are easily ignored.

Implications for Services

Research is still needed to demonstrate an empirical link between opioid use, women's reduced estrogen levels, and poor health outcomes. If the theory we have advanced here is correct, it could have profound effects on the treatment of heroin addiction among women (and men). For example, in a recent Australian study, men receiving methadone treatment were found to have a high prevalence of hypogonadotrophic hypogonadism. The authors recommended that methadone dose reduction, or substitution with alternative treatments such as buprenorphine, be considered and possibly sex hormone supplementation (Hallinan et al., 2007). Along with consideration of similar treatment adjustments for women opioid users, health providers should be alerted to the symptoms of potential low levels of estrogen so that they can screen at-risk women and inform them of the potential health effects. If women show indications of low hormone levels, additional screening for osteoporosis should also be undertaken and appropriate referral or treatment provided. A simple first step may be to advise women to increase their exposure to vitamin D to reduce the risks of osteoporosis. These findings may also have implications for the management of HCV where there are indications that estrogen has a protective effect against the progression of the disease (Di Martino et al., 2004; Sartori et al., 2000).

Socio-structural Environments

We have argued that cities generate the hyper-consumption of which drug use is a part, and that it is the poor and powerless, including women, who disproportionately suffer the social and health effects of such consumption. The micro-level hormonal problems of women opioid users are ignored because they are included in the urban poor and powerless, and because they are more concerned with the daily struggles of their existence.

Cities, as Tarde observed, by their very nature are likely to be spaces in which new ideas and consumption practices, both healthy and unhealthy, will be generated and rapidly transmitted. Urban health specialists respond by arguing for the need to concentrate resources for addressing the conditions that lead to areas of concentrated poverty, to intervene in physical and social environments, and to provide targeted services (Freudenberg, 2006). However, while governments trumpet their generosity in the funding of prevention and treatment programs, illicit drug users receive relatively little financial and moral support from government (in contrast with other socially identifiable groups which may also experience ill-health through more ubiquitous but less stigmatized dangerous consumptions, such as of alcohol or high-calorie foods). More can be done. Women opioid-users are more likely to go and to keep going to services where they feel comfortable or, as Stephanie, one of our Melbourne participants said, "where they are used to junkies" (Interview 2), such as those run by peers or drug user groups (Armstrong, Kenen, and Samost, 1991) or community health centres, rather than mainstream health services. Such centres need to be funded to provide sexual and reproductive health services, as well as those oriented toward drug use. Government funding is crucial, as most of the women we interviewed could not afford to pay for health care.

While cities have traditionally been understood as sites of both enjoyment and depravity because of the potential for over-consumption, sub-urban and rural spaces are not risk-free. Consumptions are imitated beyond cities, and as cities have become expensive sites of urban gentrification, the poor and less powerful sometimes move to lower-priced housing elsewhere. Opioid use and its harmful health effects occur in non-urban and rural areas as well (Harding & Ritchie, 2003). In addition, in smaller Australian towns and rural areas, specific drug treatment services are sparsely located and even general practitioners and pharmacies are scarce. The only pharmacist in an isolated rural town may refuse to sell contraception, if it contravenes his or

her religious or ethical beliefs (Australian Democrats, 2005). Furthermore, in such locations, drug-using women seeking treatment and support may be easily visible and exposed to stigma and gossip. In thinking about how to address the health problems that may result from opioid use among urban women, we must not forget that the positive responses such as the treatment options that are available in urban locations should flow to rural women as well.

CONCLUSION

Opioid-using women with HCV experience sexual and reproductive health problems in tandem with other health risks. They sometimes overlook their own health problems; discrimination and social exclusion contribute to their marginalisation within medical and social contexts. Even though these women are situated among the disadvantaged in Australian cities, they are still more likely to have access to resources and services than rural women. If, however, the health problems we have described in this paper continue to go unrecognized and under-researched, both urban and rural women will remain untreated and their health and social concerns will not be addressed.

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