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Hepatitis C knowledge and exposure to injecting drug use

Results from the online survey Project 1626

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Executive summary

Background

Young people who have recently initiated injecting drug use are a priority population for hepatitis C virus (HCV) prevention because of the high risk of acquiring HCV shortly after initiating injecting. However, the Third National Hepatitis C Strategy 2010–2013 also identifies people considered at risk of transitioning to injecting as an important target for HCV prevention and education, including young people who are socially engaged with people who inject drugs.

Aims

The aim of this study was to conduct a pilot survey of young people in New South Wales (NSW) to:

(i) describe the level of knowledge about HCV transmission, prevention and health consequences

(ii) examine factors associated with higher levels of HCV knowledge, including whether young people who had been exposed to injecting had different levels of knowledge to young people with no exposure to injecting, and

(iii) determine the extent that online social networking websites and other online forums were successful in attracting and recruiting young people exposed to injecting to participate in a survey.

Methods

This study was a cross-sectional, online survey of young people aged 16–26 years who lived in NSW. The survey was completed by 757 valid respondents (63% response rate). The questionnaire was divided into three sections: (i) sociodemographic characteristics and general health, (ii) HCV knowledge, substance use, and exposure to injecting drug use, and (iii) sexual health and condom use. In this report, findings are presented on sections (i) and (ii). Findings on sexual health and condom use are presented in a separate report (.

Results

The majority of respondents were female (59%), of Anglo-Australian cultural background (71%), identified as heterosexual (79%), had completed high school (75%), and lived in their parental or family home (69%). A small number of respondents reported having experienced problems at school or at work (6%), or with the police or criminal justice system (4%).

Forty percent of respondents reported illicit drug use in the previous 12 months, and only a small proportion of respondents reported use of drugs that could be injected, such as cocaine (8%), methamphetamine (6%), heroin (0.4%), and other opioids (1%). Very few respondents reported having ever injected drugs (1%).

Eleven percent of respondents reported exposure to injecting in the previous 12 months, either by having close friends or a partner who injected or having been offered drugs to inject. The proportion of respondents exposed to injecting fell below the planned target of 25% exposed to injecting. In addition, the sociodemographic characteristics of young people exposed to injecting in the present study were considerably different to those of young people exposed to injecting in other research. For example, young people exposed to injecting in the current study were much more likely than young people exposed to injecting in the Exposure and Transition study (Bryant, Ellard, Fisher & Treloar, 2012) to be in paid employment, have fewer problems at work or school, and be unlikely to have recently been in trouble with the police.

Respondents generally had moderate to good levels of knowledge about HCV transmission and health consequences, but this varied considerably between items. The mean number of correct knowledge items was 7.1 (SD = 3.1), from a maximum of 13. Higher levels of HCV knowledge were associated with a range of factors, including older age, identifying as lesbian or gay, higher educational attainment, and being in full-time employment. In

addition, illicit drug use in the previous 12 months was associated with higher levels of HCV knowledge. However, HCV knowledge among respondents who had been exposed to injecting did not differ significantly from respondents who had not been exposed to injecting.

Recommendations and conclusions

We found moderate to good levels of knowledge about HCV in a sample of young people in which few reported indicators of social disadvantage, use of drugs that can be injected, or exposure to injecting drug use. Very few had ever injected drugs. This suggests that the majority of these young people are unlikely to initiate injecting drug use. If a periodic survey of substance use and sexual health were conducted, it would be prudent to collect data on HCV knowledge, but it would not be necessary to collect this data at every survey wave.

Online methods were not successful in recruiting young people at risk of transitioning to injecting. We recommend that other sampling methods be explored in order to capture this at-risk population. As a first step, a thorough and scholarly review of the literature should be undertaken to ascertain which sampling methods have been successful in the past, what biases are associated with these methods, and whether they can be modified to improve their capacity to achieve a minimally biased sample of at risk youth.

Background and rationale

It is estimated that 230,000 people in Australia are chronically infected with hepatitis C virus (HCV), representing approximately 1% of the Australian population (The Kirby Institute, 2013). The most common route for HCV transmission is the sharing of needles, syringes and other injecting equipment among people who inject drugs (PWID), and recent estimates suggest that 40–70% of PWID in Australia are infected with HCV (Nelson et al., 2011). In 2012, there were 10,114 diagnoses of HCV infection nationally, including 3,290 in New South Wales (NSW) (The Kirby Institute, 2013).

PWID who have recently transitioned to injecting are identified as a priority population for HCV prevention because of the high risk of acquiring HCV in the early stages after initiating injecting (Becker Buxton et al., 2004; Department of Health and Ageing, 2010). The Third National Hepatitis C Strategy 2010–2013 has extended this focus to include 'potential injectors' as a priority population, referring to young people at risk of transitioning to injecting (Department of Health and Ageing, 2010). This includes young people with sociodemographic characteristics and patterns of drug use that may increase their likelihood of being exposed to social networks of people who inject, and thus their likelihood of taking up injecting (Bryant et al., 2012). The initiation of injecting typically occurs in a social context and is facilitated by an offer of drugs to inject provided by friends or acquaintances (Abelson et al., 2006). The very brief window of opportunity for HCV prevention means that innovative methods are needed to reach people before or around the time that they start injecting (Maher et al., 2006; Maher, Li, Jalaludin, Chant & Kaldor, 2007). Previous research has shown that PWID who have recently initiated injecting often have poor knowledge of HCV transmission and health consequences, how to protect themselves from exposure, and where to access sterile needles, syringes, and other injecting equipment (Becker Buxton et al., 2004; Frajzyngier, Neaigus, Gyarmathy, Miller & Friedman, 2007; Treloar & Abelson, 2005). Facilitating the acquisition of knowledge specific to HCV prevention before or at the time of initiation is a key priority for HCV prevention. Young people who have been exposed to injecting drug use but not initiated injecting are thus a key focus of the current study.

Poor knowledge of HCV has also been shown among young people in the general population. The National Survey of Australian Secondary School Students, HIV/AIDS and Sexual Health is a periodic survey of high school students in years 10 and 12 and has included items on HCV in three survey rounds, commencing in 1997 (Smith, Agius, Mitchell, Barrett & Pitts, 2009). The authors have consistently reported poor levels of knowledge about HCV transmission, prevention and health consequences that have not shifted significantly over time. While these reports have provided good evidence about HCV knowledge among high school students nationally, there is little information available about HCV among young adults (e.g., those aged 18–26 years).

Aims

The aims of this research were to:

- describe the level of knowledge about HCV transmission, prevention and health consequences among young people in NSW
- examine factors associated with HCV knowledge, including whether young people who had been exposed to injecting had different levels of knowledge to young people with no exposure to injecting, and
- determine the extent that online social networking websites and other online forums were successful in attracting and recruiting young people exposed to injecting to participate in a survey.

Method

Design

This study was a cross-sectional, online survey. It was designed as a pilot study for a periodic survey monitoring HCV knowledge among young people in NSW exposed to injecting drug use, HCV knowledge among young people generally, STI knowledge, and level of condom use. The current report includes findings on HCV knowledge and exposure to injecting drug use. A separate report examines findings about STI knowledge and condom use (Adam et al., 2014).

Sample and recruitment

Eligible respondents were young people aged 16–26 years, who lived in NSW, and were proficient in written English. Respondents were recruited online between July and November 2013. The survey was promoted via paid advertisements on Facebook and advertising circulars promoted via UNSW, other youth websites and media, and youth councils and committees. Facebook advertisements specifically targeted young people aged 16–26 years who lived in NSW. The advertisement included the following text: 'Join the survey and win! Tell us what you think about sex, relationships and partying in young people's lives'. Potential respondents who clicked on the advertisement link were directed to the survey website (www.project1626.net) which contained detailed information about the study aims and what was required of respondents. A prize draw of twenty $50 iTunes vouchers was offered to improve the rates of participation and survey completion. Respondents who completed the survey could provide their e-mail addresses in confidence and would be contacted at the completion of the study if they were randomly selected to receive one of the twenty prizes. E-mail addresses were stored separately from respondents' data so as not to compromise the anonymity of the study.

The sample for this report was comprised of respondents who completed all questionnaire items and met the eligibility criteria. The dataset was manually scanned for duplicate e-mail addresses and consecutive cases with identical or near identical data. The survey was commenced by 1202 respondents, and completed by 794 respondents. Thirty-seven respondents who completed the survey were excluded: 27 for residing outside of NSW, nine duplicate cases, and one respondent who was aged outside of the eligible range. The final sample thus comprised 757 respondents (63% of total respondents). Most respondents were recruited via Facebook (80%), with the remainder recruited via a friend's Facebook newsfeed (5%), a youth council or committee (4%), UNSW website (2%), and other websites and media (9%).

Ethical approval

Ethical approval of this study was granted by the UNSW Human Research Ethics Committee (approval number HC13035).

Measures

The questionnaire was designed by the researchers using a combination of existing validated measures, measures used in previous research, and novel items designed by the researchers.

Respondents' perceptions of their overall health were assessed with a single item: "In general, would you say your health is…" (response options: poor, fair, good, very good, excellent).

The Kessler Psychological Distress Scale (K10) was used to assess non-specific psychological distress in the preceding four weeks (Kessler et al., 2002). The K10 has excellent specificity and sensitivity in discriminating between people who do or do not meet criteria for a DSM-IV diagnosis

of mood disorder, anxiety disorder or non-affective psychosis. Internal consistency of the 10 items in the current study was excellent (Cronbach's alpha = .93). Summary scores range from 10–50, with higher scores indicating higher levels of psychological distress. We adopted the scoring rules of the 2007 Australian National Survey of Mental Health and Wellbeing (NSMHWB), which classified low distress as a score of 10–15, moderate distress as 16–21, high distress as 22–29, and very high distress as 30–50 (Australian Bureau of Statistics, 2007).

Attitudes to illicit and injecting drug use were assessed with eight items developed by the researchers. Items assessed respondents' attitudes towards drug use as well as their perceptions of their close friends' attitudes towards drug use. Examples of items include "My best friends believe that taking non-injecting drugs is no big deal" and "I believe that taking non-injecting drugs is no big deal". These items used a 5-point Likert-type scale (totally disagree, somewhat disagree, neither agree nor disagree, somewhat agree, totally agree).

The Alcohol Use Disorders Identification Test–Consumption (AUDIT-C) questions were used to assess patterns of alcohol use (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). The AUDIT-C is widely used in clinical and research settings, and has good sensitivity and specificity in detecting alcohol use disorders and heavy drinking. AUDIT-C scores range from 0–12, and a score of ≥5 indicates that further assessment is required. For the present analysis, we categorised respondents into four risk groups based on their AUDIT-C scores, adopting the approach used by Harris and colleagues (2010). Respondents with a score of 0 were categorised as non-drinkers in the previous 12 months; respondents with scores of 1–4 were categorised as low-risk drinkers, 5–8 as moderate-risk drinkers, and 9–12 as high-risk drinkers.

Residential location was assessed with a single item "Which of the following best describes where you live?" (capital city, major regional centre or city, smaller city or town, rural or remote area).

Dependent variables

There were two dependent variables in the analyses conducted for this report: (i) knowledge of HCV transmission routes and health consequences; and (ii) degree of exposure to injecting drug use in the previous 12 months.

Knowledge about the transmission and consequences of HCV was assessed with 13 items from the National Survey of Australian Secondary Students, HIV/AIDS and Sexual Health (Smith et al., 2009). Some of these items were originally about HIV and were modified for the current survey (e.g., "Someone who looks very healthy can pass on HIV" became "Someone who looks very healthy can pass on hepatitis C infection"). Respondents could answer "true", "false" or "don't know". A knowledge score was calculated from the total number of correct responses to these items, with a maximum possible score of 13.

Exposure to injecting was calculated using three items:

(i) "How many of your close friends have injected drugs in the last 12 months?" (open-ended numeric response)
(ii) "Have you had a boyfriend or girlfriend (or partner, husband/wife) who was injecting drugs in the last 12 months?" (yes, no), and
(iii) "How often in the last 12 months have you been offered drugs to inject?" (open-ended numeric response). If respondents endorsed any of these items (i.e., by reporting a non-zero response for items [i] and [iii] or a yes response to item [ii]) they were categorised as having been exposed to injecting in the previous 12 months.

Statistical analyses

Descriptive statistics were calculated for all variables and were stratified by age group (three groups: 16–17 years, 18–19 years, 20–26 years). Findings about attitudes towards illicit and injecting drug use, HCV testing, and HCV knowledge were also stratified by exposure to injecting in the previous 12 months (two groups: exposed, not exposed). Chi-square tests were used to examine age group and exposure to injecting differences for categorical variables, and Fisher's Exact Test was used when small cell counts precluded the use of chi-square tests. One-way analysis of variance (ANOVA) was used to examine age group and exposure to injecting differences for continuous variables. In instances where the variable of interest was not normally distributed, Kruskal-Wallis tests were used to make these comparisons.

Total HCV knowledge scores were grouped into quartiles to conduct analyses examining characteristics of respondents that were associated with higher levels of HCV knowledge. Univariate ordinal regression analyses were conducted to examine the associations between higher HCV knowledge and three groups of variables: sociodemographic and social disadvantage, drug use in the previous 12 months, and exposure to injecting in the previous 12 months. All statistical analyses were conducted using SPSS Version 20 (IBM Corporation, Armonk, NY, USA).

Sample characteristics

Twenty-five percent of respondents (*n* = 193) were aged 16–17 years, 25% (*n* = 192) were aged 18–19 years, and the remainder (49%, *n* = 372) were aged 20–26 years. Demographic characteristics of respondents are shown in Table 1. The majority of respondents were female, of Anglo-Australian cultural background, identified as heterosexual, had completed high school, and lived in their parental home or another family home. Few respondents reported experiencing problems at school, at work, or with the police or criminal justice system.

There were several important sociodemographic differences according to age group. Respondents aged 20–26 years were more likely than younger respondents to report being from an Anglo-Australian cultural background, having completed a university degree, being in full-time employment, living in their own accommodation (either rented or purchased), and were less likely to identify as heterosexual (see Table 1). Respondents aged 16–17 years were less likely than older respondents to live in a capital city. Regarding problems with school and work, respondents aged 16–19 years were more likely than older respondents to report being suspended from school in the previous 12 months. This is unsurprising as the vast majority of respondents aged 20–26 years would not have attended school within the previous 12 months.

Table 1. Demographic characteristics of respondents (%)

	All (*n* = 757)	Age group 16–17 (*n* = 193)	18–19 (*n* = 192)	20–26 (*n* = 372)	*p*-value
Gender					
Male	41.2	35.8	45.8	41.7	.12[a]
Female	58.5	64.2	53.6	58.1	
Transgender female	0.3	0.0	0.5	0.3	
Cultural background					
Anglo-Australian	70.8	67.9	64.1	75.8	.02
Aboriginal and/or Torres Strait Islander	2.4	2.1	2.1	2.7	
Other	26.8	30.1	33.9	21.5	
Sexual identity					
Heterosexual	78.6	81.3	84.4	74.2	< .001
Lesbian / gay	7.4	2.1	4.2	11.8	
Bisexual	10.8	14.0	9.9	9.7	
Other	3.2	2.6	1.6	4.3	
Highest level of education achieved					
Up to year 10 or equivalent	25.2	80.3	9.9	4.6	< .001
Year 12 or equivalent	42.8	19.7	76.0	37.6	
TAFE / college graduate	9.5	0.0	9.4	14.5	
University degree	22.5	0.0	4.7	43.3	
Employment status					
Full-time	16.6	0.5	5.2	30.9	< .001
Part-time / casual	23.9	25.4	26.6	21.8	
Student	50.6	63.2	61.5	38.4	
Unemployed / Centrelink / other	8.9	10.9	6.8	8.9	
Current residence					
Parental or other family home	69.4	97.9	84.4	46.8	< .001
Rented or owned flat or house	25.9	0.5	9.9	47.3	
Boarding house / other temporary accommodation	2.8	0.5	3.6	3.5	
Other	2.0	1.0	2.1	2.4	
Residential location					
Capital city	38.2	30.1	38.0	42.5	< .001
Major regional centre or city	28.9	23.3	33.9	29.3	
Smaller city or town	26.3	34.2	23.4	23.7	
Rural or remote area	6.6	12.4	4.7	4.6	
Problems with school or work in past 12 months					
School suspension	1.8	3.6	3.1	0.3	.002[b]
Work probation or warning	2.2	1.0	2.1	3.0	.37[b]
School expulsion or work termination	2.8	1.6	2.6	3.5	.41
Problems with police and justice system in past 12 months					
Police interview as crime suspect	2.9	5.2	2.1	2.2	.09
Police or court curfew	0.3	0.5	0.5	0.0	.26[b]
Court fine	1.2	0.5	1.0	1.6	.57[b]
Court bond or probation	1.1	0.5	1.6	1.1	.53[b]
Juvenile detention or prison	0.3	0.5	0.5	0.0	.26[b]

[a]Statistical comparison of age group by gender excludes transgender respondents due to small number of transgender respondents.

[b]Fisher's Exact Test used due to small cell counts.

General and mental health

Table 2 shows the self-reported general health and mental health of respondents. While 53% of respondents rated their general health as 'very good' or 'excellent', a high proportion of respondents had K10 scores indicative of 'high' or 'very high' levels of current psychological distress (46%). There was an association between age and psychological distress, with younger respondents being more likely to report very high psychological distress compared to older respondents. The proportion of respondents in the current study reporting high or very high psychological distress is considerably greater than was reported in the general population in the representative 2007 NSMHWB, in which 13% of young women and 6% of young men aged 16–24 years had K10 scores in the high to very high range (Australian Institute of Health and Welfare [AIHW], 2011a).

Approximately one-quarter of respondents reported being diagnosed with a mental health disorder in their lifetime, most commonly depression (20%) followed by anxiety (17%). There was no association been age group and mental health diagnoses (see Table 2). While not directly comparable with our data, in the 2007 NSMHWB 15% of young people aged 16-24 met criteria for diagnosis with an anxiety disorder in the previous 12 months and 6% met criteria for diagnosis with an affective disorder in the previous 12 months (AIHW, 2011a).

Table 2. Self-reported general and mental health (%)

	All	Age group 16–17	18–19	20–26	*p*-value
Current self-rated general health					
Poor	1.5	2.6	1.6	0.8	.07
Fair	12.5	9.3	15.1	12.9	
Good	32.5	34.7	24.0	35.8	
Very good	41.2	39.4	44.8	40.3	
Excellent	12.3	14.0	14.6	10.2	
Current psychological distress (K10)					
Low	23.1	15.0	22.4	27.7	< .001
Moderate	31.2	28.0	30.2	33.3	
High	23.6	25.9	23.4	22.6	
Very high	22.1	31.1	24.0	16.4	
Ever diagnosed with mental health disorder					
Depression	20.5	20.7	17.2	22.0	.41
Anxiety disorder	16.9	15.5	16.7	17.7	.96
Any mental health disorder	26.6	25.4	25.5	27.7	.78

K10, Kessler Psychological Distress Scale

Patterns of alcohol and other drug use

Alcohol use

The National Health and Medical Research Council's 2009 Australian Guidelines to Reduce Health Risks from Drinking Alcohol recommend drinking no more than two standard drinks on any day to reduce the lifetime risk of alcohol-related harm, and no more than four standard drinks on any one occasion to reduce the risk of alcohol-related injury on that occasion (National Health and Medical Research Council [NHMRC], 2009). For young people aged under 18, the guidelines recommend that the safest option is to abstain from alcohol, and for those aged 15–17 years to delay the initiation of alcohol for as long as possible (NHMRC, 2009).

Respondents' patterns of alcohol use are shown in Table 3. Twenty-four percent of respondents reported consuming alcohol more often than weekly. On a typical drinking day, 24% of respondents reported consuming three or four standard drinks, while 37% reported consuming more than four standard drinks. Thirty-one percent of respondents reported consuming six or more drinks on a single occasion less than monthly, 22% at least monthly, 14% at least weekly, and 0.5% daily or almost daily. According to AUDIT-C scores, 16% of respondents were categorised as non-drinkers in the previous 12 months, 39% as low-risk drinkers, 35% as moderate-risk drinkers, and 9% as high-risk drinkers (see Table 3).

Table 4 (page 11) shows general population data on patterns of alcohol use among young people from the representative 2010 National Drug Strategy Household Survey (NDSHS) (AIHW, 2011b). While questions on alcohol use are not identical to those asked in the current study, some broad comparisons can be made. Young people aged 16–17 years in the NDSHS were slightly less likely to report abstaining from alcohol and slightly more likely to report at least weekly alcohol consumption compared to respondents aged 16–17 years in the current study, while young people aged 18 and over in the NDSHS were more likely to report abstaining from alcohol but were also more likely to report at least weekly alcohol consumption.

Table 3. Patterns of alcohol use in the previous 12 months (%)

		Age group			
	All	**16–17**	**18–19**	**20–26**	***p*-value**
At least weekly alcohol use	23.9	3.1	23.4	34.9	< .001
3–4 standard drinks on typical drinking day	24.0	16.1	24.0	28.2	.006
> 4 standard drinks on typical drinking day	37.0	30.1	44.3	36.8	.02
Six or more drinks on single occasion					
Never	32.5	56.5	26.0	23.4	< .001
Less than monthly	30.5	28.0	33.3	30.4	
At least monthly	22.2	14.0	26.0	24.5	
At least weekly	14.8	1.6	14.6	21.8	
Level of alcohol risk according to AUDIT-C					
Non-drinker	16.1	36.3	8.9	9.4	< .001
Low-risk drinker	39.2	39.4	42.2	37.6	
Moderate-risk drinker	35.3	23.8	38.5	39.5	
High-risk drinker	9.4	0.5	10.4	13.4	

AUDIT-C, Alcohol Use Disorders Identification Test – Consumption questions.

Table 4. Patterns of alcohol use among a representative sample of young people in the 2010 National Drug Strategy Household Survey (%)

	Age group		
	16–17	18–19	20–29
Abstain from alcohol	31.6	13.7	14.7
At least weekly alcohol use	5.2[1]	39.8	46.0
> 2 standard drinks a day on average	9.9	31.7	26.9
≥ 4 drinks on single occasion[2]			
Never	59.1	33.7	39.5
Less than monthly	10.7	8.2	14.2
At least monthly	19.4	25.7	20.4
At least weekly	10.8	32.4	25.8

Source: Australian Institute of Health and Welfare (2011b).

1 In this instance only, the proportion reported refers to 12-17 year olds.

2 In our study we examined the proportion of respondents who consumed six or more drinks on a single occasion.

Illicit drug use

Table 5 shows respondents' patterns of lifetime illicit drug use. Fifty percent of respondents reported ever using an illicit drug, with drug use more commonly reported with increasing age ($p < .001$). For example, respondents aged 20–26 years were twice as likely to report lifetime drug use compared to those aged 16–17. The most commonly used drugs were cannabis (44%) and ecstasy (20%).

Table 5. Patterns of illicit drug use in lifetime (%)

	Age group			
	All	16-17	18-19	20-26
Any illicit drug use	49.5	31.6	43.2	62.1
Cannabis	44.4	28.5	39.1	55.4
Ecstasy	19.8	6.2	13.0	30.4
Inhalants (e.g., amyl nitrite, nitrous oxide, glue, aerosols)	12.9	6.7	8.3	18.5
Hallucinogens (LSD, magic mushrooms)	12.7	4.7	8.9	18.8
Cocaine	11.6	1.6	5.7	19.9
Benzodiazepines	11.1	5.2	6.8	16.4
Methamphetamine (speed, base, ice/crystal)	9.6	0.5	4.7	16.9
Ketamine	3.7	0.5	1.0	6.7
Other opioids (e.g., Oxycontin, MS Contin)	3.7	2.1	1.6	5.6
Steroids and other PIED	2.2	1.0	2.6	2.7
GHB	1.3	0.0	0.5	2.4
Methadone or buprenorphine	1.2	0.5	1.6	1.3
Heroin	0.9	0.5	1.0	1.1

GHB, gamma-hydroxybutyrate; LSD, lysergic acid diethylamide; PIED, performance and image enhancing drugs.

Table 6 shows respondents' patterns of illicit drug use in the previous 12 months. Forty percent of respondents reported using an illicit drug in the previous 12 months, and consistent with patterns of lifetime drug use, drug use in the previous 12 months was more commonly reported among older respondents ($p < .001$). The most commonly reported drugs used in the previous 12 months were cannabis (33%) and ecstasy (15%).

The proportion of young people in the current study who reported any drug use was higher than reported in the 2010 NDSHS across all age groups (see Table 7) (AIHW, 2011b). It is unclear why drug use was elevated in the current study compared to population estimates. It is possible that sampling techniques used in the NDSHS may underestimate the true population prevalence of illicit drug use among young people who do not wish to disclose drug use during a household survey. This is particularly pertinent for young people who are living in the family home and want to avoid disclosure of drug use to parents and other family members. In addition, the NDSHS adopted the category 14–17 years for young people aged under 18, while we surveyed 16–17 years and grouped these young people as a category. As the mean age of drug use initiation is typically around 16–18 years (Degenhardt, Lynskey & Hall, 2000), it is likely that the 14–15 year olds sampled in the NDSHS reduced the prevalence of drug use in the 14–17 year old age group in the NDSHS.

Table 6. Patterns of illicit drug use in the previous 12 months (%)

	Age group			
	All	16-17	18-19	20-26
Any illicit drug use	39.6	28.5	37.5	46.5
Cannabis	33.2	26.4	35.4	35.5
Ecstasy	15.1	5.7	12.0	21.5
Cocaine	7.7	1.0	5.2	12.4
Hallucinogens (LSD, magic mushrooms)	7.4	3.6	6.8	9.7
Inhalants (e.g., amyl nitrite, nitrous oxide, glue, aerosols)	7.1	3.6	6.3	9.4
Benzodiazepines	6.3	3.1	4.2	9.1
Methamphetamine (speed, base, ice/crystal)	5.7	0.0	3.6	9.7
Other opioids (e.g., Oxycontin, MS Contin)	1.5	1.6	1.0	1.6
Ketamine	1.3	0.5	0.5	2.2
Steroids and other PIED	1.2	1.0	1.6	1.1
GHB	0.4	0.0	0.5	0.5
Methadone or buprenorphine	0.4	0.0	1.0	0.3
Heroin	0.4	0.5	0.5	0.3

GHB, gamma-hydroxybutyrate; LSD, lysergic acid diethylamide; PIED, performance and image enhancing drugs.

Table 7. Prevalence of illicit drug use among a representative sample of young people in the 2010 National Drug Strategy Household Survey (%)

	Age group		
	14-17	18-19	20-29
Illicit drug use ever	18.7	37.0	51.3
Illicit drug use in previous 12 months	14.5	25.1	27.5

Source: Australian Institute of Health and Welfare (2011b).

Injecting drug use

Table 8 shows the proportion of respondents who reported injecting drug use as well as which drugs respondents had injected. Injecting was reported by very few respondents (1%). Of those respondents who had injected drugs, five were aged 20–26 years, two were aged 18–19 years, and one was aged 16–17 years. Of the seven respondents who had injected in the previous 12 months, four had injected at least once a month during this period. The proportion of respondents who reported injecting drug use is similar to the prevalence of lifetime injecting drug use reported in the NDSHS (0.9% among 20–29 year olds) (AIHW, 2011b).

Table 8. Patterns of injecting drug use

	Ever		Past 12 months	
	n	%	*n*	%
Any injecting drug use	8	1.1	7	0.9
Drugs injected				
Heroin / other opioids	2	0.3	1	0.1
Methamphetamine (any form)	3	0.4	3	0.4
Steroids	2	0.3	1	0.1
Cocaine	2	0.3	2	0.3

Exposure to injecting drug use

Table 9 shows the extent that respondents were exposed to injecting drug use in the previous 12 months. Overall, 11% of respondents reported any exposure to injecting, either by having close friends or a partner (boyfriend, girlfriend) who injected, or having been offered drugs to inject. Among those who reported having close friends who injected (7% of respondents), most had only one close friend who injected (4% of all respondents) and only a small number reported having three or more close friends who injected (1% of all respondents). Of those who had been offered drugs to inject in the previous 12 months (5% of respondents), most had been offered drugs to inject on one or two occasions (3% of all respondents).

Respondents aged 18–19 years were more likely to report any exposure to injecting compared to older and younger respondents, although this did not quite reach significance. There was also a statistically significant association between age group and reporting having a partner who injected, with a higher proportion of 16–17 year olds reporting that their partner injected.

Comparison of methods used to recruit young people exposed to injecting

An aim of this study was to determine whether online recruitment was effective in capturing young people exposed to injecting, and the extent to which the characteristics of young people exposed to injecting recruited via this method were comparable to young people exposed to injecting recruited via other methods. We compared respondents in the current study who had been exposed to injecting with young people exposed to injecting in the Exposure and Transition study (ET) conducted by Bryant and colleagues (2012). Both the recruitment methods and eligibility criteria in the ET study differed from those of the current study. ET participants were recruited in person at youth services and other organisations providing health and other services to disadvantaged young people. Eligible participants were young people aged 16–24 years who had been exposed to injecting in the previous 12 months, had used illicit drugs in the previous

Table 9. Exposure to injecting drug use in the previous 12 months

		Age group			
	All	16-17	18-19	20-26	*p*-value
Had close friends who injected (%)	6.7	6.2	9.4	5.6	.23
Number of close friends who injected (median, range)	1 (1–15)	1 (1–15)	1 (1–10)	1 (1–10)	.92
Had partner (boyfriend, girlfriend) who injected (%)	1.3	2.1	1.0	1.1	.03[a]
Offered drugs to inject (%)	4.9	3.1	7.8	4.3	.08
Number of times offered drugs to inject (median, range)	2 (1–10)	2.5 (1.5-4.5)	2 (1–10)	2 (1–10)	.40
Any exposure to injecting (%)	10.7	9.3	15.1	9.1	.07

[a]Fisher's Exact Test used due to small cell counts.

12 months, and had at least one indicator of social disadvantage in the previous 12 months (e.g., homelessness, involvement with criminal justice system, trouble with work or school, living in a high-risk family environment).

Table 10 shows that the sociodemographic profile of respondents in the current study who had been exposed to injecting is considerably different to that of the ET sample (all of whom had been exposed to injecting). Compared to the ET sample, the current sample of young people exposed to injecting were significantly less likely to be male, identify as heterosexual, and/or be a student, and were more likely to be in full-time employment. The current sample of young people exposed to injecting were also significantly less likely to have experienced problems at school, work, or with the police in the previous 12 months. Young people in the current study also appeared to have lower levels of exposure to injecting than in the ET study, with fewer reporting having close friends or a partner who injected, and fewer reporting being offered drugs to inject, although these differences were not statistically significant (see Table 10).

Table 10. Sociodemographic comparisons of respondents exposed to injecting in the current study with those exposed to injecting in the *Exposure and Transition study* (%)

	Current study (*n* = 81)	*Exposure and Transition study* (*n* = 261)	*p*-value
Mean age (SD)	19.9 (2.8)	18.4 (2.6)	-
Male gender	46.9	64.0	.006
Identified as heterosexual	70.4	84.7	.003
Current student	46.9	64.0	.006
School suspension in past year	6.2	32.2	< .001
Current paid employment	44.4	11.9	< .001
Work probation or warning in past year	7.4	19.5	.01
Trouble with police in past year	8.6	51.3	< .001
Exposure to injecting in past 12 months			
Had close friends who injected	63.0	69.3	.31
Had partner who injected	12.3	16.5	.37
Offered drugs to inject	45.7	57.1	.07

SD, standard deviation.

Source of *Exposure and transition study* data: Bryant, Ellard, Fisher & Treloar (2012).

Attitudes towards illicit and injecting drug use

Table 11 shows respondents attitudes towards illicit and injecting drug use and their perceptions of their best friends' attitudes towards drug use, stratified by age group. There were no significant age differences found in either respondents' own attitudes or their perceptions of what their best friends thought about drug use.

The majority of respondents agreed that non-injecting drug use is dangerous (76%) with a minority reporting that non-injecting drug use is "no big deal" (20%). Respondents' perceptions of their friends' attitudes were generally consistent with their own attitudes, with a higher proportion reporting that their friends considered non-injecting drug use to be "no big deal" (31%) and a lower proportion reporting that their friends considered non-injecting drug use to be dangerous (59%) (see Table 11).

Attitudes towards injecting drug use were less favourable. The vast majority of respondents considered injecting to be dangerous (96%) while a minority reported that injecting was "no big deal" (3%). There was broad consistency between respondents' own attitudes and their perceptions of their best friends' attitudes towards injecting (see Table 11).

Table 11. Attitudes towards illicit and injecting drug use stratified by age group (%)

Respondents who somewhat or totally agree that...	All	Age group			*p*-value
		16-17	18-19	20-26	
Illicit drug use					
My best friends believe that taking non-injecting drugs is no big deal	31.3	28.5	28.6	34.1	.26
My best friends believe that taking non-injecting drugs is dangerous	59.3	60.6	60.4	58.1	.79
I believe that taking non-injecting drugs is no big deal	19.8	17.6	19.3	21.2	.58
I believe that taking non-injecting drugs is dangerous	75.8	74.6	73.4	77.7	.48
Injecting drug use					
My best friends believe that injecting drugs is no big deal	3.7	4.1	3.6	3.5	.93
My best friends believe that injecting drugs is dangerous	91.4	90.7	92.7	91.1	.75
I believe that injecting drugs is no big deal	3.3	2.6	3.1	3.8	.75
I believe that injecting drugs is dangerous	95.8	95.9	96.9	95.2	.63

Table 12 shows attitudes towards illicit and injecting drug use stratified by exposure to injecting in the previous 12 months. Compared to respondents who had not been exposed to injecting, those who had been exposed to injecting were significantly more likely to report favourable attitudes towards both non-injecting and injecting drug use, and significantly more likely to report favourable attitudes among their best friends. However, the majority of respondents who had been exposed to injecting considered injecting drug use to be dangerous (90%) while a minority considered injecting to be "no big deal" (7%).

Table 12. Attitudes towards illicit and injecting drug use according to whether respondents had been exposed to injecting in the previous 12 months (%)

	Exposed to injecting		
Respondents who somewhat or totally agree that…	Yes (*n* = 81)	No (*n* = 676)	*p*-value
Illicit drug use			
My best friends believe that taking non-injecting drugs is no big deal	45.7	29.6	.003
My best friends believe that taking non-injecting drugs is dangerous	44.4	61.1	.004
I believe that taking non-injecting drugs is no big deal	33.3	18.2	.001
I believe that taking non-injecting drugs is dangerous	54.3	78.4	< .001
Injecting drug use			
My best friends believe that injecting drugs is no big deal	6.2	3.4	.21[a]
My best friends believe that injecting drugs is dangerous	82.7	92.5	.003
I believe that injecting drugs is no big deal	7.4	2.8	.04[a]
I believe that injecting drugs is dangerous	90.1	96.4	.007[a]

[a]Fisher's Exact Test used due to small cell counts.

HCV testing and perceived likelihood of acquiring HIV

Whereas most respondents reported having heard of HCV (90%), a minority had not (7%), or were unsure if they had (3%). There were no differences according to age group (p = .59) or exposure to injecting (p = .69) in whether respondents had heard of HCV.

Tables 13 and 14 show the proportion of respondents who reported having been tested for HCV and the proportion who perceived they were likely to acquire HCV, stratified by age group and exposure to injecting, respectively.

The majority of respondents reported never having been tested for HCV (64%) or were unsure if they had been tested (16%; see Table 13). Twenty percent of respondents reported having ever tested for HCV; 12.5% in the previous 12 months and 7.7% more than 12 months ago. There were age differences in the number of respondents reporting HCV testing. Lifetime and recent testing were more likely to be reported by respondents aged 20–26 years, who were almost twice as likely as 18–19 year olds and almost three times as likely as 16–17 year olds to report having ever been tested (see Table 13). There were also differences in HCV testing according to exposure to injecting. Both lifetime and recent HCV testing were more likely to reported by respondents who had been exposed to injecting compared to those who had not been exposed, although the comparison of the proportions reporting recent testing was not statistically significant (see Table 14).

No respondents reported ever having been told that they have HCV. Very few respondents (1.5%) perceived that they were "likely" or "very likely" to acquire HCV in the future (see Table 13). There were no significant age group differences in perceived likelihood of acquiring HCV. However, a significantly higher proportion of young people not exposed to injecting reported being unlikely to acquire HCV compared to young people exposed to injecting (see Table 14).

Table 13. HCV testing and perceived likelihood of acquiring HCV stratified by age group (%)

		Age group			
	All	16-17	18-19	20-26	*p*-value
HCV testing in lifetime					
No	63.9	72.5	72.9	54.8	< .001
Unsure	15.9	17.1	12.5	16.9	
Yes	20.2	10.4	14.6	28.2	
HCV testing in previous 12 months	12.5	6.7	7.8	18.0	< .001
Perceived likelihood of acquiring HCV					
Unlikely or very unlikely	79.4	76.7	77.1	82.0	.29
Neutral	19.2	21.8	20.3	17.2	
Likely or very likely	1.5	1.6	2.6	0.8	

HCV, hepatitis C virus.

Table 14. HCV testing and perceived likelihood of acquiring HCV according to whether respondents were exposed to injecting in the previous 12 months (%)

	Exposed to injecting		
	Yes	No	*p*-value
HCV testing in lifetime			
No	59.3	64.5	.02
Unsure	9.9	16.6	
Yes	30.9	18.9	
HCV testing in previous 12 months	18.5	11.8	.09
Perceived likelihood of acquiring HCV			
Unlikely or very unlikely	67.9	80.8	.03
Neutral	29.6	17.9	
Likely or very likely	2.5	1.3	

HCV, hepatitis C virus.

Knowledge about HCV

Table 15 shows respondents' levels of knowledge about HCV transmission routes and health consequences stratified by age group, and Table 16 shows HCV knowledge stratified by whether respondents had been exposed to injecting. There were significant age differences in the number of correct responses to HCV knowledge items. Respondents aged 20–26 years correctly identified significantly more items (M = 7.6) than respondents aged 18–19 years (M = 6.8; p = .003) and respondents aged 16–17 years (M = 6.4; p < .001), although there were no differences between respondents aged 18–19 years and those aged 16–17 years (p = .20) (see Table 15). In addition, there were no significant differences in the total number of correct HCV knowledge items between respondents who had been exposed to injecting and those who had not (M = 7.2 vs. M = 7.0; p = .73) (see Table 16).

Respondents' knowledge of HCV was generally moderate to good, but varied considerably between items. While the majority of respondents were aware that HCV could be transmitted via injecting drug use and via tattooing and body piercing, respondents were less aware of other routes of transmission such as sharing ancillary injecting equipment (e.g., spoons, water), and sharing razors and toothbrushes (see Table 15). Many respondents were not aware of many practices that do not carry a risk of HCV transmission such as sharing toilets and showers, sharing food, cups and cutlery, kissing, and being bitten by a mosquito. Only 6% of respondents correctly identified that heterosexual sexual transmission of HCV is unlikely. Respondents were more aware, however, that HCV has long-term health effects and could be transmitted by somebody who "looks very healthy" (77%) (see Table 15).

HCV knowledge in the current study was considerably higher than reported in the 4th National Survey of Australian Secondary Students, HIV/AIDS and Sexual Health of year 10 and year 12 students (Smith et al., 2009). For example, in that survey 68% of participants were aware that injecting drug use was a risk factor for HCV (compared to 86% in the current study), 52% were aware that HCV can have

Table 15. Knowledge of HCV transmission and consequences stratified by age group (%)

	Correct Response	Age group			
		All	16-17	18-19	20-26
Hepatitis C has no long-term effects on your health	False	71.9	68.4	69.8	74.7
It is possible to be vaccinated against hepatitis C	False	27.2	21.8	21.4	33.1
People who have injected drugs are not at risk for hepatitis C	False	86.1	82.4	80.7	90.9
Hepatitis C can be transmitted by tattooing and body piercing	True	82.4	74.6	81.2	87.1
All people who have hepatitis C can be cured	False	59.7	54.4	55.7	64.5
Hepatitis C can be transmitted by sharing razors or toothbrushes	True	48.6	43.5	49.5	50.8
A person can get hepatitis C by sharing spoons, water or other drug preparation equipment when injecting drugs	True	51.4	50.8	52.6	51.1
A person can get hepatitis C by sharing food, cups or cutlery	False	54.8	46.1	53.1	60.2
A person can get hepatitis C from sharing toilets and showers	False	58.7	50.3	55.2	64.8
A person can get hepatitis C from kissing	False	50.1	44.0	45.8	55.4
A woman can get hepatitis C through having sex with a man	False	5.7	3.1	6.2	6.7
A person can get hepatitis C from mosquitoes	False	32.4	25.4	31.2	36.6
Someone who looks very healthy can pass on hepatitis C	True	77.1	71.0	73.4	82.3
Overall HCV knowledge score (M, SD)[a]	–	7.1 (3.1)	6.4 (3.1)	6.8 (3.2)	7.6 (3.0)

HCV, hepatitis C; M, mean; SD, standard deviation.

[a]Overall HCV knowledge scores ranged from 0 (no items correct) to 13 (all items correct).

long-term health effects (72% in the current study), and just 10% were aware that there is presently no HCV vaccine (27% in the current study) (Smith et al., 2009). The older age of respondents in the current study was a likely contributor to the HCV knowledge disparities between the two studies. However, when only 16–17 year olds in the current study were compared with participants in the secondary schools survey, HCV knowledge was still much better among respondents in the current study. Higher levels of HCV knowledge were also found in the current study compared to the 2009 survey of young people attending the Big Day Out music festival in Sydney (median age 20 years) (Bryant, Wilson, Hull, Lavis & Treloar, 2010).

Table 16. Knowledge of HCV transmission and consequences according to whether respondents were exposed to injecting in the previous 12 months (%)

	Correct response	Exposed to injecting	
		Yes	No
Hepatitis C has no long-term effects on your health	False	71.6	71.9
It is possible to be vaccinated against hepatitis C	False	25.9	27.4
People who have injected drugs are not at risk for hepatitis C	False	86.4	86.1
Hepatitis C can be transmitted by tattooing and body piercing	True	84.0	82.2
All people who have hepatitis C can be cured	False	55.6	60.2
Hepatitis C can be transmitted by sharing razors or toothbrushes	True	54.3	47.9
A person can get hepatitis C by sharing spoons, water or other drug preparation equipment when injecting drugs	True	53.1	51.2
A person can get hepatitis C by sharing food, cups or cutlery	False	58.0	54.4
A person can get hepatitis C from sharing toilets and showers	False	63.0	58.1
A person can get hepatitis C from kissing	False	49.4	50.1
A woman can get hepatitis C through having sex with a man	False	6.2	5.6
A person can get hepatitis C from mosquitoes	False	32.1	32.4
Someone who looks very healthy can pass on hepatitis C	True	77.8	77.1
Overall HCV knowledge score (M, SD)[a]	–	7.2 (3.1)	7.0 (3.1)

HCV, hepatitis C; M, mean; SD, standard deviation.

[a]Overall HCV knowledge scores ranged from 0 (no items correct) to 13 (all items correct).

Knowledge of where to access sterile injecting equipment

Respondents were also asked if they were aware of places where they could access sterile needles and syringes. Twenty-four percent of respondents reported knowing where they could access sterile needles and syringes. Respondents aged 20–26 years were more likely to report knowing where to access injecting equipment (28.5%) compared to those aged 18–19 years (18.2%) and 16–17 years (21.8%; $p = .02$). Respondents who were exposed to injecting in the previous 12 months were significantly more likely than those who were not exposed to injecting to report knowing where to access injecting equipment (39.5% vs. 22.3%; $p < .001$).

Knowledge of where to access sterile injecting equipment was generally poor. Although it is encouraging that young people exposed to injecting were most likely to know where to access sterile injecting equipment, the majority of young people exposed to injecting did not know where to access equipment (60.5%). This is equivalent to the 60% of socially disadvantaged young people exposed to injecting in the ET study who reported not knowing where to access sterile injecting equipment (Bryant et al., 2012).

Factors associated with HCV knowledge

Tables 17, 18, and 19 examine whether there were characteristics of respondents that were associated with higher levels of knowledge about HCV transmission, prevention and health consequences. We examined sociodemographic characteristics, indicators of social disadvantage, illicit and injecting drug use, and exposure to injecting.

Several characteristics of respondents were associated with higher levels of HCV knowledge. Respondents with higher levels of HCV knowledge were more likely to be aged 20–26 (compared to those aged 16–17), to identify as lesbian or gay (compared to heterosexual young people), to have completed a university degree, to be in full-time employment (compared

Table 17. Univariate ordinal regression analyses examining covariates of higher HCV knowledge: Demographic characteristics and indicators of social disadvantage

	β	95% CI	*p*-value
Age group			
16 – 17	Ref.		
18 – 19	0.21	-0.16, 0.58	.26
20 – 26	0.57	0.25, 0.90	< .001
Gender[a]			
Male	Ref.		
Female	-0.12	-0.38, 0.14	.36
Cultural background			
Anglo-Australian	Ref.		
Aboriginal and/or Torres Strait Islander	0.58	-0.27, 1.43	.18
Other	-0.24	-0.53, 0.05	.10
Sexual identity			
Heterosexual	Ref.		
Lesbian / gay	0.84	0.34, 1.34	.001
Bisexual / other	0.03	-0.34, 0.40	.88
Highest level of education			
University degree	Ref.		
TAFE / college graduate	-0.99	-1.49, -0.49	< .001
Year 12 or equivalent	-0.76	-1.09, -0.42	< .001
Up to year 10 or equivalent	-1.02	-1.40, -0.64	< .001
Employment status			
Full-time	Ref.		
Part-time / casual	-0.25	-0.66, 0.16	.23
Student	-0.41	-0.77, -0.05	.03
Unemployed / Centrelink / other	-0.74	-1.28, -0.21	.007
Current residence			
Parental or other family home	Ref.		
Rented or owned flat or house	.54	0.24, 0.83	< .001
Boarding house/other temporary accommodation / other	.01	-0.60, 0.61	.98
Ever diagnosed with mental illness	0.22	-0.07, 0.51	.14
Any problems at school or work[b]	-0.09	-0.64, 0.46	.75
Any problems with police or justice system[c]	-0.06	-0.72, 0.59	.85

CI, confidence interval; Ref., reference category.

[a]Transgender respondents excluded due to low cell count.

[b]Includes: school suspension, work probation or warning, expulsion from school, and/or termination of employment.

[c]Includes: interviewed by police as crime suspect, police/court curfew, fine, bond/probation, and/or juvenile detention/prison.

to being a student or unemployed/on social welfare), and to live in rented or owned accommodation (compared to living in a parental or other family home) (see Table 17).

Respondents with higher levels of HCV knowledge were also more likely to have used ecstasy, cocaine or other illicit drugs in the previous 12 months (excluding cannabis, methamphetamine and opiods which were not significantly associated with HCV knowledge) (see Table 18). Respondents who had injected drugs in the previous 12 months were no more or less likely to report higher HCV knowledge than respondents who had not injected drugs (see Table 18). Similarly, respondents who reported exposure to injecting drug use in the previous 12 months were no more or less likely to report higher HCV knowledge compared to respondents who had not been exposed to injecting (see Table 19).

Table 18. Univariate ordinal regression analyses examining covariates of higher HCV knowledge: Illicit and injecting drug use in the previous 12 months

	β	95% CI	*p*-value
Cannabis	0.26	0.01, 0.54	.06
Ecstasy	0.48	0.12, 0.84	.009
Cocaine	0.70	0.22, 1.19	.005
Methamphetamine (any form)	0.46	-0.09, 1.02	.10
Heroin / other opioids	-0.33	-1.22, 0.56	.47
Any other illicit drug use (e.g., GHB, ketamine, LSD)	0.42	-0.07, 0.76	.02
Injected drugs	0.82	-0.54, 2.17	.24

CI, confidence interval; GHB, gamma-hydroxybutyrate; LSD, lysergic acid diethylamide.

Table 19. Univariate ordinal regression analyses examining covariates of higher HCV knowledge: Exposure to injecting in the previous 12 months

	β	95% CI	*p*-value
Had close friends who injected	0.05	-0.46, 0.56	.85
Had partner (boyfriend, girlfriend) who injected	-0.11	-1.23, 1.01	.85
Offered drugs to inject	0.05	-0.77, 0.88	.90
Any exposure to injecting	0.07	-0.34, 0.48	.73

CI, confidence interval.

Discussion

This report presents findings on HCV knowledge and exposure to injecting drug use among an online sample of young people in NSW recruited primarily via social networking websites. Most respondents identified as Anglo-Australian, were well-educated or currently studying, and had stable accommodation. Only a minority reported indicators of social disadvantage such as unemployment, unstable accommodation, trouble with school and work, and contact with the police and criminal justice system. The sample reported higher than expected levels of current psychological distress and higher levels of illicit drug use than have been reported among similarly aged young people in representative population surveys in Australia. However, only a minority of respondents reported use of injectable drugs such as methamphetamine, cocaine, and opioids, 1% of respondents reported lifetime injecting drug use, and only 11% reported recent exposure to injecting drug use.

One of the objectives of the study was to recruit a subsample of young people who had been exposed to injecting drug use in the previous 12 months, either by having close friends who injected drugs, having a partner who injected, or having been offered drugs to inject. The proportion of respondents exposed to injecting fell below the planned target of 25% exposed to injecting. In addition, the sociodemographic characteristics of young people exposed to injecting in the present study were considerably different to those of young people exposed to injecting in the ET study (Bryant et al., 2012). Young people exposed to injecting in the current study were much more likely than the ET sample to be in paid employment, had fewer problems at work or school, and were unlikely to have recently been in trouble with the police. These findings, together with the low risk profile of the overall sample as described above, suggest that recruiting online via social networking websites is not an optimal method of accessing young people at risk of acquiring HCV.

The measure of exposure to injecting was developed by the researchers and trialed in a survey of young people attending the Big Day Out music festival (Bryant et al., 2010). In the Big Day Out study, 26% of young people reported exposure to injecting in the previous 12 months (Bryant et al., 2010). Higher rates of illicit drug use generally reported among music festival attendees may have contributed to explaining the disparity in the number of respondents reporting exposure to injecting in our study and the Big Day Out study, due to greater exposure to social networks of people using drugs (Bryant et al., 2010; Lim, Hellard, Hocking, Spelman & Aitken, 2010). However, this is an inadequate explanation as rates of lifetime drug use between the current sample and the Big Day Out samples were broadly consistent. While injecting drug use was more commonly reported in the Big Day Out study compared to the current study (3% vs. 1%), the difference is not sufficiently large to explain the difference in exposure to injecting. It is possible that differences in exposure to injecting are a function of the different sampling methods used, as the current study recruited participants primarily via Facebook advertisements while Big Day Out participants were recruited face-to-face at the music festival. Many young people may be more likely to participate in a survey when approached directly (e.g., at a music festival, venue, or youth service) than when required to proactively click on an advertisement link and make a decision whether to participate in a survey. It is also possible that exposure to injecting was underreported in the current study. The majority of respondents were living with their parents and family, and may have been reluctant to disclose that they had friends or a partner who injected or that they had themselves been offered drugs to inject or had injected drugs.

HCV knowledge in this study was moderate to good, especially as most respondents were unlikely to be engaged with social networks of PWID and were therefore at low risk of initiating injecting drug use. The majority of respondents were aware that injecting drug use was a risk factor for HCV but were less aware that sharing ancillary injecting equipment could result in HCV transmission. Many respondents also erroneously reported practices as risk factors for HCV that are not associated with HCV transmission (e.g., sharing toilets and showers, kissing). The majority of respondents did not know that there is no HCV vaccine currently available, and only 6% correctly identified that heterosexual sex is not a risk factor for HCV. While HCV knowledge was better in the current study compared to other surveys of young people in Australia (Bryant et al., 2010; Smith et al., 2009), there is scope to substantially improve young people's knowledge of HCV transmission, prevention, and health consequences.

A number of factors were associated with higher levels of HCV knowledge. In terms of demographic characteristics these included being aged 20–26 years, living outside of the family home, identifying as lesbian or gay, having completed a university degree, and being in full-time employment. While other research has reported higher levels of education among those with higher levels of HCV knowledge (Treloar et al., 2011), there has been a lack of research that has examined factors associated with HCV knowledge. It is perhaps unsurprising that knowledge improved with age, as older respondents may have had more opportunities to be exposed to information and education materials about HCV. It is possible that as older respondents were more likely to live outside of the family home and to be in full-time employment that these variables are linked to higher HCV knowledge by age. There has also been a lack of research examining HCV knowledge among sexual minorities. However, a recent study of gay and bisexual men in Australia showed very good knowledge about HCV (Brener, Ellard, Murphy & Callander, 2013).

In terms of drug use, those who reported using ecstasy, cocaine or other drugs in the previous 12 months (excluding cannabis, methamphetamine, and opioids) were significantly more likely to report higher levels of HCV knowledge. However, injecting drug use and exposure to injecting were not associated with higher levels of HCV knowledge. This is perhaps not an unexpected finding, as young people who have recently transitioned to injecting drug use tend to report poor knowledge about HCV transmission and how to prevent transmission during injecting (Bryant, 2013a; Doab, Treloar & Dore, 2005; Jost, Goldsamt, Harocopos, Kobrak & Clatts, 2010; Treloar et al., 2011).

While young people exposed to injecting were no more likely to report better knowledge about HCV, they were more likely to report favourable attitudes towards illicit drug use and injecting drug use, and were more likely to report favourable attitudes towards drug use and injecting among their close friends. Previous research has reported that exposure to social networks of PWID can lead to the normalisation of injecting, characterized by acceptance and curiosity (Abelson et al., 2006; Harocopos, Goldsamt, Kobrak, Jost & Clatts, 2009). Considered together, the HCV knowledge deficits, attitudes towards injecting, and contact with PWID provides support for targeting young people exposed to injecting for education about HCV transmission and prevention.

Findings from the ET study have shown that higher levels of exposure to injecting are associated more strongly with indicators of social disadvantage such as homelessness and the experience of abuse or violent crime, and with having more favourable attitudes to injecting, and less strongly associated with patterns or history of illicit drug use (Abelson et al., 2006; Bryant et al., 2012). This suggests that prevention initiatives should give priority to broader social intervention and support together with specific individual-focused drug interventions.

Recommendations and conclusions

This project was undertaken as a pilot study of an online periodic survey of substance use and sexual health among young people in NSW. We found moderate to good levels of knowledge about HCV in a sample of young people in which few reported indicators of social disadvantage, use of drugs that can be injected, or exposure to injecting drug use. Very few had ever injected drugs. This suggests that the majority of these young people are unlikely to initiate injecting drug use, and thus can be considered a low-risk group for HCV transmission. If a periodic survey of substance use and sexual health were conducted, it would be prudent to collect data on HCV knowledge, but it would not be necessary to collect this data at every survey wave. For example, questions on HCV could be included every second or third year to examine patterns of knowledge over time.

Online methods were not successful in recruiting young people at risk of transitioning to injecting, a priority population for HCV prevention and education. We recommend that other sampling methods be explored in order to capture this at-risk population. As a first step, a thorough and scholarly review of the literature should be undertaken to ascertain which sampling methods have been successful in the past, what biases are associated with these methods, and whether they can be modified to improve their capacity to achieve a minimally biased sample of at risk youth. Authors Bryant and Treloar have been successful in sampling socially disadvantaged young people exposed to injecting using face-to-face recruitment methods at youth services in metropolitan Sydney for the ET study (Bryant et al., 2012), but the sample was a non-probability sample with no capacity for generalization, and no measures of bias were collected. Author Bryant has also used respondent-driven sampling (RDS) with at-risk youth, with marginal success (Bryant, 2013b), but modifications could be implemented to improve its effectiveness. Also, census methods such as those used in the Australian Needle and Syringe Program Survey (Iversen & Maher, 2013) and the NSW Pharmacy Needle and Syringe Survey (Bryant, Wilson, & Treloar, 2011) could be considered. In any case, a thorough review of the methodological literature would be prudent prior to any further periodic survey of this target group.

References

Abelson, J., Treloar, C., Crawford, J., Kippax, S., Van Beek, I., & Howard, J. (2006). Some characteristics of early-onset injection drug users prior to and at the time of their first injection. *Addiction, 101*, 548–555.

Adam, P. C. G., de Wit, J. B. F., Treloar, C., Shepherd, B., Duck, T., Byron, P., ... Holden, J. (2014). *Project 1626. Towards an online periodic survey of sexual health among young people: new surveillance and measurement tools to inform sexual health programs and assess their outcomes.* Unpublished report.

Australian Bureau of Statistics. (2007). *National Survey of Mental Health and Wellbeing: Summary of results* (ABS Cat No. 4326.0). Canberra: ABS.

Australian Institute of Health and Welfare. (2011a). *Young Australians: Their health and wellbeing 2011* (Cat. no. PHE 140). Canberra: AIHW.

Australian Institute of Health and Welfare. (2011b). *2010 National Drug Strategy Household Survey report* (Drug statistics series no. 25. Cat. no. PHE 145). Canberra: AIHW.

Becker Buxton, M., Vlahov, D., Strathdee, S. A., Des Jarlais, D. C., Morse, E. V., Ouellet, L., . . . Garfein, R. S. (2004). Association between injection practices and duration of injection among recently initiated injection drug users. *Drug and Alcohol Dependence, 75*, 177–183.

Brener, L., Ellard, J., Murphy, D., & Callander, D. (2013). Perceptions and deflections: Associations between attitudes towards people with hepatitis C and testing for hepatitis C among Australian gay and bisexual men. *Sexual Health, 10*, 268–274.

Bryant, J. (2013a). A study of young people who inject drugs: an opportunity to decrease high risk injecting by improving knowledge about hepatitis C prevention. *Vulnerable Children and Youth Studies, 9*, 104–113.

Bryant, J. (2013b). Using respondent-driven sampling with 'hard to reach'marginalised young people: problems with slow recruitment and small network size. *International Journal of Social Research Methodology*. Advance online publication. http://dx.doi.org/10.1080/13645579.2013.811921

Bryant, J., Ellard, J., Fisher, D., & Treloar, C. (2012). T*he exposure and transition study: Exposure to injecting and hepatitis C among young people at risk (Monograph 2/2012)*. Sydney: National Centre in HIV Social Research, The University of New South Wales.

Bryant, J., Wilson, H., Hull, P., Lavis, Y., & Treloar, C. (2010). *Drug use, hepatitis C and exposure to injecting among young people in New South Wales: The Big Day Out Survey 2006–2009 (Monograph 1/2010)*. Sydney: National Centre in HIV Social Research, The University of New South Wales.

Bryant, J., Wilson, H., & Treloar, C. (2011). *Pharmacy Needle and Syringe Survey, New South Wales 2009 (Monograph 1/2011)*. Sydney: National Centre in HIV Social Research, The University of New South Wales.

Bush, K., Kivlahan, D. R., McDonell, M. B., Fihn, S. D., & Bradley, K. A. (1998). The AUDIT Alcohol Consumption Questions (AUDIT-C): An effective brief screening test for problem drinking. *Archives of Internal Medicine, 158*, 1789–1795.

Degenhardt, L., Lynskey, M., & Hall, W. (2000). Cohort trends in the age of initiation of drug use in Australia. *Australian and New Zealand Journal of Public Health, 24*, 421–426.

Department of Health and Ageing. (2010). *Third National Hepatitis C Strategy 2010–2013*. Canberra: Commonwealth of Australia.

Doab, A., Treloar, C., & Dore, G. J. (2005). Knowledge and attitudes about treatment for hepatitis C virus infection and barriers to treatment among current injection drug users in Australia. *Clinical Infectious Diseases, 40*, S313–S320.

Frajzyngier, V., Neaigus, A., Gyarmathy, V. A., Miller, M., & Friedman, S. R. (2007). Gender differences in injection risk behaviors at the first injection episode. *Drug and Alcohol Dependence, 89*, 145–152.

Harocopos, A., Goldsamt, L. A., Kobrak, P., Jost, J. J., & Clatts, M. C. (2009). New injectors and the social context of injection initiation. *International Journal of Drug Policy, 20*, 317–323.

Harris, A. H., Bradley, K. A., Bowe, T., Henderson, P., & Moos, R. (2010). Associations between AUDIT-C and mortality vary by age and sex. *Population Health Management, 13*, 263–268.

Iversen, J., & Maher, L. (2013). *Australian Needle and Syringe Program National Data Report 2008–2012*. Sydney: The Kirby Institute, The University of New South Wales.

Jost, J. J., Goldsamt, L. A., Harocopos, A., Kobrak, P., & Clatts, M. C. (2010). Hepatitis C knowledge among new injection drug users. *Drugs: Education, Prevention and Policy, 17*, 821–834.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., . . . Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*, 959–976.

Lim, M. S. C., Hellard, M. E., Hocking, J. S., Spelman, T. D., & Aitken, C. K. (2010). Surveillance of drug use among young people attending a music festival in Australia, 2005–2008. *Drug and Alcohol Review, 29*, 150–156.

Maher, L., Jalaludin, B., Chant, K. G., Jayasuriya, R., Sladden, T., Kaldor, J. M., & Sargent, P. L. (2006). Incidence and risk factors for hepatitis C seroconversion in injecting drug users in Australia. *Addiction, 101*, 1499–1508.

Maher, L., Li, J., Jalaludin, B., Chant, K. G., & Kaldor, J. M. (2007). High hepatitis C incidence in new injecting drug users: a policy failure? *Australian and New Zealand Journal of Public Health, 31*, 30–35.

National Health and Medical Research Council. (2009). *Australian guidelines to reduce health risks from drinking alcohol*. Canberra: NHMRC.

Nelson, P. K., Mathers, B. M., Cowie, B., Hagan, H., Des Jarlais, D., Horyniak, D., & Degenhardt, L. (2011). Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: results of systematic reviews. *The Lancet, 378*, 571–583.

Smith, A., Agius, P., Mitchell, A., Barrett, C., & Pitts, M. (2009). *Secondary Students and Sexual Health 2008 (ARCSHS Monograph Series No. 70)*. Melbourne: Australian Research Centre in Sex, Health & Society, La Trobe University.

The Kirby Institute. (2013). *HIV, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2013*. Sydney: The Kirby Institute, The University of New South Wales.

Treloar, C., & Abelson, J. (2005). Information exchange among injecting drug users: a role for an expanded peer education workforce. *International Journal of Drug Policy, 16*, 46–53.

Treloar, C., Hull, P., Bryant, J., Hopwood, M., Grebely, J., & Lavis, Y. (2011). Factors associated with hepatitis C knowledge among a sample of treatment naive people who inject drugs. *Drug and Alcohol Dependence, 116*, 52–56.