

Heroin Use Among Female Adolescents: The Role of Partner Influence in Path of Initiation and Route of Administration

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ABSTRACT

This study examined heroin initiation and route of administration among 16 female adolescents in the greater Baltimore Metropolitan area. Participants were more than twice as likely to be introduced to heroin by a male friend or boyfriend (IHM) than introduced to heroin by other means (IHO). The majority of IHM females were introduced by a male friend rather than a romantic partner. No relationship was found between path of initiation (IHM, IHO) and initial route of administration (inhalation, smoking, injecting) or history of injection (ever injected, never injected). The effect of opposite-gender peer influence in the initiation of female adolescent heroin use is discussed along with how the current findings may influence treatment and prevention efforts. A statistically significant relationship was found for

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initial route of administration and for history of injection. Ninety-four percent of participants reported initiation of heroin use by inhalation, while an alarming 75% of participants reported injecting heroin at some time during their history of use. Participants were no more likely to be introduced to injection by a boyfriend or male friend than by other means. The finding that the majority of females first try heroin through inhalation is consistent with an increased use of heroin by this method among young people in recent years. However, the majority of users in this study used heroin through injection at least once in their addict career, a route of administration associated with increased health and safety risks. Potential explanations for the progression from snorting to injection are presented as well as implications for the delivery of prevention and treatment services.

Key Words: Heroin; IHM; IHO; Adolescents.

INTRODUCTION

Heroin Trends

Heroin use has been steadily increasing on a national level since 1992 (1,2). Increased heroin use among adolescents has been attributed to increased availability, lower cost, and higher purity of the substance (3). In the past, the association of heroin use with injection deterred many from trying the drug. However, due to the increased potency of heroin, users are now able to obtain a high through smoking or sniffing the substance that previously required injection. A major drug trend is the growing popularity of heroin among young people who snort rather than inject the substance. One study found that between 1989 and 1991, 61% of new users were 18 to 25 years of age; whereas, between 1993 and 1995, 88% were 18 to 25 years of age (4).

Statistics in some states suggest that male and female adolescents seeking treatment for heroin use are equally represented. Out of 6814 adolescents admitted to state-run addiction treatment agencies in Maryland during the 1998 fiscal year, 486 adolescents mentioned heroin use, of whom 242 were male and 244 were female (5). While adolescent female and male heroin users were equally represented in treatment, a surprising difference was noted regarding route of administration. While most adolescents who reported heroin use snorted the substance, 18.3% of males and 32.3% of females reported injection as the primary route of administration (5). The reason for such a gender gap is unclear, as well as the means of initiation and progression from snorting to injecting the substance.



Male Influence in Heroin Use Initiation

It is important to have an understanding of the characteristics that make individuals vulnerable to a particular path of heroin initiation. Identifying the mechanisms by which young users are introduced to heroin use and progress from inhalation to injection is essential for an effective response to the heroin epidemic by treatment professionals. While several risk and protective factors have been identified as having an effect on the initiation of adolescent substance use, little is known specifically about how adolescents are socialized into the heroin subculture. This is especially true for female adolescents.

Women are more likely to attribute the onset of their heroin use to social reasons, particularly the influence of an opiate-using partner. In a study of sex differences in addict careers, men were more likely than women to buy heroin for their first use, whereas women were more likely than men to report that their first narcotic drug was a gift. While men and women were most likely to report self-initiation of heroin use, the second most reported influence for heroin initiation for both men and women was a male friend (6). Studies have found women more likely than men to use because a spouse was using, to live with a spouse or common-law partner during the year prior to first heroin use, to have a spouse who was an addict and who began using heroin before they did, and to be introduced to heroin by an addicted sex partner (7).

Male Influence in Injection Initiation

Research demonstrates that males influence not only the initiation of heroin use among women, but the route of administration as well. Most injectors of heroin initiate use in the presence of other injectors (3). In a study of needle-sharing behavior, women were unlikely to inject heroin alone and more likely to share a needle with someone else compared to men (8). For women, this tends to be a sex partner. Rosenbaum (7) states, "the woman's initiation into addiction takes the form of immersion into the world of her man." This includes the intimate aspects of use such as "sharing the actual injection of the drug and the needle that is used." Incidents of sharing injecting equipment have been found to be extremely high among individuals who have injecting sexual partners. In a study comparing HIV risk between women and men who inject drugs, the primary reason given for sharing injection equipment was sharing with lovers (9). Women were more likely to report that they shared injection equipment because they could not use needles and syringes on their own, and they injected with others present more so than men (9). These findings



indicate that women may be in a position of dependency on men in their drug taking and less able to engage in injection practices on their own.

Gender Differences in Heroin Injection

Some studies demonstrate that women are more likely to inject than their male counterparts (10,11), and that women who inject do so more frequently compared to men who inject (9). These results may be explained by the progression of addiction. There is evidence that the longer the user's addiction to heroin, the more likely he or she is to become an injector (11) and that once introduced to heroin, women become addicted more quickly than do men (7). In one study, while an equal amount of men and women reported becoming addicted to heroin within a year of initial use, 46.5% of women reported being addicted within the first 3 months of use compared to only 22.4% of men. This fast progression from experimentation to addiction appears to lead many women to move from snorting to injecting the substance in an effort to achieve a greater high and/or avoid becoming "dope sick."

The stratification hypothesis has also been used to explain why women are more likely to inject compared to men. According to this hypothesis, the stratification of drug addicts resembles the division of labor and male-domination within larger society, such that women are subordinate to men in drug dealings and income. Sung, Tabachnick, and Feng (11) write, "By virtue of their economic superiority, men are better able to fulfil their demands of sex and drugs, using and manipulating women heroin addicts to do their bidding. As a result, female addicts, whose injecting behaviors have often been initiated by their male partners, become the primary victims of harassment and exploitation." In other words, women who become more quickly addicted to heroin than men and struggle to support a habit may find use by injection to produce the most economically efficient high.

According to the Social Network Theory of substance use initiation, groups of close acquaintances are formed, usually through ethnic and age identification that influence members' use and methods of heroin intake. Socializing with friends and/or a partner who uses heroin through injection reduces stigma associated with this route of administration and legitimizes injection as a way to get high. Socialization with heroin injectors also provides the novice with technical assistance in obtaining and handling the necessary equipment. In an ethnographic study of intravenous heroin users in Washington, D.C., heroin-use networks were found to form in one of two ways: long term friendships and the ability to "cop dope" successfully (12). Individuals within networks often knew each other years prior to the initiation of heroin use and the initiation of use through injection. The social network



theory is consistent with research on heroin initiation among women, which has found that many women are initiated in the context of an intimate relationship with an opiate-using partner whose use began prior to their own.

Risks of Heroin Injection

Using heroin through injection has many associated risks, mainly from sharing needles, which is common among injectors. In a study of 408 heroin users, 281 had injected on at least one occasion, and 73% of injectors had used injecting equipment on at least one occasion after it had been used by someone else (13). Compared to older and more experienced injectors, younger injectors with shorter injecting careers have been found more likely to report recent sharing of used injecting equipment (14). Other research indicates that while new injectors initially practice safer injecting behaviors compared to long-term injectors, they engage more frequently in high-risk behaviors over time (15).

Female injectors may take more risks than their male counterparts. Women were found more likely than men to have accepted used needles and syringes from someone who was later found to be HIV seropositive (9). In an ethnographic study of female drug users in Brooklyn, almost half were HIV positive, and many were infected with viral hepatitis and tuberculosis (16). Decreasing or eliminating injecting behavior can reduce the risk of transmitting disease through unsafe injecting practices. In a study of fluctuating drug markets and HIV risk taking, a reduction in HIV risk was found among individuals who shifted from heroin injection to smoking (17).

In 1994, the number of AIDS cases transmitted by heterosexual contact surpassed the number of cases transmitted by injection drug use. The majority of these cases of heterosexual transmission resulted from sexual contact with a partner who was an intravenous drug user (18). Therefore, in addition to the risk of HIV infection from shared injection equipment, women who inject drugs may be at increased risk of HIV infection as sexual partners of men who inject (9,19). Women who inject drugs have been found more likely to have drug-using sex partners, and more likely to accept used needles and syringes from regular sex partners than men who inject (20). Furthermore, women who inject heroin are more likely to have multiple sex partners compared to their male counterparts as well as similarly aged women who do not use drugs (9,21,22). In a comparison of HIV risk between women and men who inject drugs, women were more likely to have been paid for sex than men, and such payment was more likely to be a regular source of income for these women (9).



With an increasing number of adolescents initiating and progressing from inhalation to injection of heroin use, it is crucial that treatment providers adequately understand the risk factors associated with the initiation and maintenance of heroin use to provide the most effective prevention and treatment interventions. Just as different risk and protective factors are associated with the use of different drugs, unique factors likely exist that serve to protect or make adolescents vulnerable to a specific path of initiation and route of administration. The current study examines the path of initiation and route of administration of first heroin use among female adolescents, as well as the prevalence and factors associated with users who progress from inhalation to injection.

Hypotheses

Based on the literature of adult female heroin users, the following hypotheses were posited for adolescent females in the current study. It was hypothesized that a greater proportion of heroin-using female adolescents would be introduced to heroin by a boyfriend or male friend (IHM) than by any other means (IHO), and that a relationship would exist between path of initiation and route of administration, such that IHM heroin users would be more likely to have injected the substance than IHO heroin users. It was predicted that regardless of initial path of initiation, females who ever injected would be more likely to be initiated to injection by a male friend or boyfriend than by any other means. Consistent with existing literature, it was predicted that there would be a relationship between injection status and age of initiation, as well as injection status and amount of heroin use, such that females who reported ever injecting heroin would initiate heroin use at a younger age and use heroin a greater number of times compared with those who never injected.

METHOD

Participants

The sample consisted of 16 female adolescents from suburbs of the Greater Baltimore Metropolitan area ranging in age from 15 to 19, with a mean participant age of 17.18 ($SD = 1.17$). Caucasian adolescents accounted for 93.8% ($n = 15$) of the total sample, followed by a biracial (Caucasian and African-American) category (6.3%, $n = 1$). Of the total number of participants, 43.8% ($n = 7$) were in outpatient substance abuse treatment,



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31.3% ($n=5$) in residential substance abuse treatment, 18.8% ($n=3$) referred through a probation officer, and 6.3% ($n=1$) incarcerated.

Measures

Heroin use initiation was assessed by the Heroin Use Initiation Form (HUIF), a six-item questionnaire designed for this study, which asked respondents to identify the relationship of the person who first introduced them to heroin. Questions related to path of initiation asked respondents to think about who they were with the first time they used heroin. They were then asked to identify the one person who most encouraged them to use and/or who did not try to stop them from using. Participants were asked to identify the route of administration the first time that they ever used the substance. Additionally, they were asked if they have ever injected heroin, and if so, their relationship with the person who first introduced them to injection of the substance. Respondents were also asked to report the age at which they first used heroin, and the approximate number of times they used.

Procedure

This research was conducted through Loyola College in Maryland and approved through the Loyola College Grants Office for Research Involving Human Subjects on June 27, 2000. Numerous substance abuse treatment agencies, detention centers, and juvenile justice agencies who provided services to female adolescents with a history of heroin use in the Greater Baltimore Metropolitan area were contacted by the researcher to participate in the study. Of the agencies approached, six agreed to participate, and four of these agencies actually provided referrals during the data collection period.

During 1-year period of data collection, staff members from the referral agencies participating in the study screened for eligible participants, to whom they gave information about the research project. Staff members contacted the researcher with names of potential participants who agreed to be contacted, who then contacted these individuals by telephone to further explain the study. An appointment was scheduled at the respective referral agency with parents and adolescents who verbally agreed to participate in the research study. At this meeting, parents were given an informed consent form containing a general explanation of the purpose of the study, including the expectations of the participant, potential benefits and risks involved, the right to decline participation, and how to obtain results following completion of the study. Parents/legal guardians who gave permission for their daughter to participate in the study were asked to sign an informed consent



form. Adolescents who agreed to participate were asked to sign an assent form, indicating that they understood the purpose of the study and expectations and rights of participation.

Those adolescents who agreed to participate and had parental consent were then administered measures of substance use initiation. The duration of this meeting lasted approximately 1 hour. Each participant's test data were collected, scored, and interpreted by the researcher. The questionnaires were stored in a locked facility (to which only the researcher has access) until the completion of all data collection. Codes were assigned to participant data in order to protect anonymity. Participant responses to items on the HUIF questionnaire allowed the experimenter to determine path of initiation for initial heroin use. The researcher divided this data into two groups: those who identified a boyfriend or male friend as introducing them to heroin, and those who identified another path of initiation. This division of data permitted between-group comparison of IHM and IHO females on information obtained from the HUIF (route of PJ administration for initial use, path of initiation for intravenous use, and age of initial heroin use).

RESULTS

Paths of Initiation

The most prevalent path of initiation to heroin use reported by participants was male friend (43.75%, $n = 7$), followed by boyfriend (25%, $n = 4$), female friend (25%, $n = 4$), and parent (6.25%, $n = 1$). For the purposes of between-group comparisons, paths of initiation were collapsed into two discrete categories. The IHM group represents those introduced to heroin by either a male friend or a boyfriend, whereas the IHO group represents those introduced to heroin by any other means, including parent, other relative, or female friend. Many adolescents had difficulty identifying key variables to differentiate a male friend from a boyfriend. Grouping these categories together was intended to capture the influence of male gender in the initiation of heroin use in female adolescents, regardless of how female participants labeled this relationship. Based on this grouping strategy, 68.75% of females ($n = 11$) were introduced to heroin by a boyfriend or male friend (IHM), and 31.25% ($n = 5$) were introduced to heroin by other means (IHO). An alpha level of 0.05 was used in assessing statistical significance in the following tests.

The main hypothesis that the sample would contain a significantly greater number of IHM than IHO females was not supported, $\chi^2(1,$



$n = 16$) = 2.25, $p = 0.13$. However, it should be pointed out that the obtained results show a trend in the expected direction with IHM females comprising 68.75% ($n = 11$) of the total sample and IHO females 31.25% ($n = 5$).

Initial Route of Administration and History of Injection

Separate chi-square tests were performed for initial route of administration (inhalation or injection) and history of injection status (ever injected and never injected) with statistically significant results. Female adolescents were significantly more likely to report first using heroin through inhalation (93.75%, $n = 15$) as compared to injection (6.25%, $n = 1$), $\chi^2(1, n = 16) = 12.25, p = 0.00$, and using heroin through injection at some time in the history of their use (75%, $n = 12$) compared to never injecting heroin (25%, $n = 4$) $\chi^2(1, n = 16) = 4.0, p < 0.05$.

Initial Path of Initiation and Route of Administration

The prediction that there would be a statistically significant relationship between initial path of initiation (IHM, IHO) and initial route of administration (inhalation, injection) was not supported, $\chi^2(1, n = 16) = 2.35, p = 0.13, \phi = 0.38$. Adolescents who reported injection as the route of administration during heroin use initiation were no more likely to be introduced to injection by a boyfriend or male friend compared to other means (IHM = 0; IHO = 1).

Initial Path of Initiation and Injection Status

The prediction that there would be a relationship between initial path of initiation (IHM, IHO) and injection status (never injected, ever injected) such that IHM females would be more likely to report ever injecting heroin compared to IHO females was not supported, and $\chi^2(1, n = 16) = 0.097, p = 0.75, \phi = -0.08$, respectively. Adolescents who were introduced to heroin by a boyfriend or male friend were no more likely to progress to use by injection compared to those introduced to heroin by other means (IHM = 8; IHO = 4).

Path of Injection

The prediction that adolescents who reported ever injecting heroin would be significantly more likely to be introduced to injection by a boyfriend than by other means was not supported, $\chi^2(1, n = 16) = 0.33, p = 0.56$ (IHM = 7; IHO = 5).



Age of Heroin Initiation and Frequency of Use

A series of independent group *t*-tests was used to test hypotheses regarding age of onset and extent of heroin use. The hypotheses that there would be a relationship between injection status and age of first heroin use, as well as number of times of heroin use, such that females who ever injected would have initiated heroin use at a younger age and used heroin a greater number of times compared to those who never injected, was not supported, $t(14) = -1.75, p = 0.10$, and $t(14) = 0.91, p = 0.38$. However, the means were in the expected direction.

DISCUSSION

Path of Initiation

The results from this study lend support to the Social Network Theory of substance use initiation among adolescents, which posits that peer influence occurs in intimate clusters as opposed to a large peer group. Participants identified a single person who influenced their decision to initiate heroin use (male friend, boyfriend, female friend, and parent). With the exception of one participant who identified her father as the person by whom she was introduced to heroin, all other participants reported being introduced by a peer. When paths of initiation groups were collapsed into two categories (IHM and IHO), between-group comparisons revealed that female adolescents in this study were more than twice as likely to be introduced to heroin by a male friend or boyfriend (68.75%) than by any other means (31.25%). Although this result is not statistically significant, it demonstrates a trend in the direction of male influence in the initiation of heroin use. With a larger sample size, this effect would likely become statistically significant.

It was predicted that the majority of male influence in this study would stem from romantic relationships rather than friendships with males. However, this was not the case. In fact, the results were in the opposite direction. Of those introduced to heroin by a male, the majority (64%) was introduced by a male friend. The percentage of total participants who reported being introduced to heroin by a boyfriend (25%) was equal to the percentage that reported being introduced by a female friend (25%). Therefore, while male influence may be important in the initiation of heroin use among female adolescents, it may not always depend on romantic involvement.

It is possible that some females in this study were introduced to heroin by a male friend with whom they wished to establish a future sexual or



romantic relationship. For these females, using heroin with a male friend may have been an attempt to form an intimate bond. Studies have found that female narcotic addicts report poor relationships with their fathers, who were often absent, or seen as distant and uninvolved (23,24). A father's perception of, and relationship with, his adolescent daughter is particularly important in facilitating sexual identity and the formation of heterosexual relationships. The failure of female adolescents to connect with a father figure during formative years may cause them to turn to romantic relationships to meet their needs for belonging and attachment. However, this lack of connection may also leave them feeling unprepared to handle the intimacy of such a relationship. Additionally, they may fear that caring deeply for another person will lead to rejection.

For this group of adolescents, using heroin with a male friend may not only numb the anxiety surrounding intimacy, but also serve as a vehicle through which to relate to another person. Heroin use rituals may create a "pseudo intimate" bond between users, in which they can feel connected in a special way, yet avoid true intimacy. Relationship issues become secondary to the never-ending cycle of seeking, scoring, and using heroin. Becoming involved with a heroin-using male may be attractive to females who fear rejection in relationships. Once connected through their heroin use, partners may become mutually dependent on the drug, as well as each other. These young women may attempt to make themselves indispensable to an opiate-using male by loving a supporting a "junkie" when no one else would.

Elucidating gender differences in peer influence is an area that warrants further research and may be central to understanding why the majority of females in this study were introduced to heroin by a male. Many problems experienced by young women in our society may stem from pressure to give up power and present a false self in order to be accepted by peers (25). As they give up power during adolescence and become more socially deferent, young women may become particularly susceptible to the influence of male peers in substance use initiation, maintenance, and relapse. Yet prevention and treatment programs that include peer refusal components often do not present skills specific to dealing with opposite-gender influence. Furthermore, different skills may be required for refusing drugs when offered by a male depending on the type of relationship (friend or boyfriend). Treatment providers should discuss the impact of romantic and opposite gender relationships on the initiation of substance use, as well as a potential relapse trigger with female adolescents (26–28). If more positive ways to meet needs for affiliation are not identified, young women will likely return to the same unhealthy relationships in which their heroin use was initiated.



An alternative explanation to the above finding is that heroin initiation is influenced more by the closeness of the relationship with the initiator regardless of their gender. In other words, male friends may not be considered as close to female adolescents as female friends and boyfriends. The former group initiated 43.75% of females in the current study to heroin while the latter group initiated half of the females. Further research is needed to explore this interpretation.

Route of Administration

Participants were statistically more likely to use heroin at the time of initial use by inhalation (93.75%, $n = 15$) as opposed to injection (6.25%, $n = 1$), $\chi^2(1, n = 16) = 12.25, p = 0.00$. This finding reflects the national trend of heroin use by injection declining over the last 10 years, with a concomitant resurgence of its use by other means (29). While only one adolescent reported injection as the initial route of administration, an alarming 75% ($n = 12$) of female adolescents in this study reported injecting heroin at some point during their history of use. This finding is both clinically and statistically significant (25%, $n = 4$), $\chi^2(1, n = 16) = 4.0, p < 0.05$. Adolescents in this sample reported a higher prevalence of injecting heroin compared to a national sample. A recent study (30) of a national treatment sample found that between the years of 1992 and 1997, 40% of all adolescents admitted to substance abuse treatment agencies who used heroin reported doing so through injection. In 1997, heroin-using youths reported the highest rate of injection drug use (44.6%) compared to users of other substances. Heroin-using youths represented 56% of all child and adolescent injection drug users in treatment (31).

Education and prevention efforts regarding the dangers of injection may be more effective at preventing injection at the initiation of heroin use than once a person has become addicted. Many novice heroin users initiate through inhalation, believing this to be a safe and nonaddictive route of administration. However, these users are prime candidates for injection if they persist in their drug-use career, as injection of heroin is associated with advanced addiction. Therefore, it is recommended that prevention efforts aim to communicate that there is no safe way to use heroin and no route of administration that shields users from addiction and its associated consequences.

Path of Initiation and Route of Administration

No relationship was found between path of initiation (IHM, IHO) and initial route of administration. The IHM adolescents were no more likely



than IHO adolescents to report injection as the initial route of administration. Similarly, no relationship was demonstrated between injection status (ever injected, never injected) and path of injection (IHM, IHO). While adolescents in this study were significantly more likely to report ever injecting than never injecting heroin, the hypothesis that involvement with a heroin-using male partner would be the most frequent path to using heroin through injection was not supported. This is contradictory to the finding that most women initiate heroin injection in the presence of a male partner (7). However, it is possible that females are influenced by males in ways not measured in the current study. For example, males may have more of an impact on the maintenance than the initiation of heroin injection. While female injectors may be introduced to injection by a number of paths, involvement with an opiate-injecting partner may make it more likely for injection to become their primary route of administration. On the other hand, females who initiate heroin injection but are not involved with an opiate-injecting partner may be less likely to continue use through this route due to a lack of social support and assistance with injecting. While needle sharing was not examined in the current study, consistent with the literature, it is thought that female adolescents who share needles would be more likely to report sharing with a male partner than sharing with any other person. Future studies should explore these hypotheses.

Age of Heroin Initiation and Frequency of Use

The results of the current study indicate that factors other than the influence of a boyfriend make female adolescents more likely to progress from inhalation to injection of heroin. As previously discussed, research has found that women became addicted to heroin within a shorter period of time compared with men (7). In a study of gender differences in cocaine users seeking treatment, compared with men, women had a more rapidly progressive course of illness and preferred more addictive routes of drug administration (32). While the current study did not have adequate statistical power to detect between-group differences on injection status and number of times of heroin use, the results were in the expected direction. It is predicted that with a larger sample size future studies will find a longer history of use and a greater number of occasions of use among those who progress to injection compared with adolescents who never inject. Regardless of the initial path of initiation (IHM, IHO), female users likely progress from inhalation of heroin to injection as their addiction progresses in order to obtain a high and/or avoid withdrawal symptoms.



Limitations

The limitations of this study should be considered when interpreting data, the majority of which result from a small sample size. Because this study lacked adequate statistical power, statistically significant differences were the result of a large effect size. Many hypotheses in the current study approached significance, and it is likely that statistical significance would be achieved in future replication studies that include a larger sample size with adequate power.

Comparisons of this sample to the larger population of female adolescent heroin users is limited because of the sample size, and the race, geographical, and treatment status of participants. Only one participant of the total sample identified herself as belonging to a race category other than Caucasian, Biracial (Caucasian and African-American). Therefore, the results may not be representative of female heroin users from other race categories. The county of residence for the adolescents who participated in this study contains large rural areas and small towns surrounding a centrally located suburban area. The female heroin users from this area may not be representative of adolescent users from larger cities in Maryland or in other states. Likewise, counties with comparable populations and demographics may not display the same problem with female adolescent heroin use. This phenomenon may be an artifact of the close proximity of the county used in this study to Baltimore, Maryland, a city nationally recognized for its high rates of heroin use. Finally, the participants in this study were all involved in some type of treatment for their heroin use. Therefore, results may not generalize to female adolescents who have used heroin but have not received substance abuse treatment.

Recommendations

The causes of heroin initiation are numerous and diverse, and it is important that future studies carefully examine which of these potential causes is most significant for specific populations. The findings reported in this article regarding route of heroin administration are part of a research project in which several hypotheses related to female adolescent heroin use were explored. As the focus of the original study was quite broad, detailed questions specific to heroin route of administration and progression from inhalation to injection were not addressed. It is recommended that future research in this area include a qualitative approach that explores the circumstances that lead from inhalation to injection. Specific questions to consider include how many times female adolescents are exposed to heroin injection before they initiate injection and the factors that influence this decision. Additionally, the circumstances of the initiation should be queried,



such as how many people were present, whether needles were shared, and if the injection was self or other-administered. Details about their relationship with the initiator should also be explored, including how long they have known one another and the course of their relationship.

While the current study examined the path of initiation to initial heroin use as well as to heroin use by injection, it did not distinguish the participants' usual route of administration. Therefore, for those who reported use through injection it is unclear whether this became a usual route of administration, or occurred one time only. Determining the factors that increase risk for injection becoming a primary or regular route of administration may be important in preventing the risk factors associated with this route of administration. A comparison of primary injectors with those who injected but did not continue to administer by this route would help to elucidate these risk factors.

Although the majority of heroin users in this study injected at some time during their heroin use experience, some users never progress from inhalation to injection of heroin. Because of the number of risks associated with injecting, it is important to understand the factors that keep some users from administering heroin through injection. It is hypothesized that several factors protect some individuals from progressing from inhalation to injection of heroin. These include receiving education/information on the risks of injection, having a needle phobia, witnessing negative effects of injection (such as an overdose), believing that one can't become addicted through inhalation, and the absence of or less advanced addiction.

Future research should measure the incidence rate of risk factors associated with injection in an adolescent population, such as needle sharing behavior and sexual promiscuity. The incidence rate of HIV and hepatitis among adolescent injectors is an under-examined phenomenon that also warrants further research. From an applied perspective, it is recommended that substance abuse counselors routinely inquire about injection history in substance abuse assessments. Youth who report a history of injection should be referred for appropriate testing to rule out medical complications associated with their injection. Direct care treatment providers should have candid discussions with their adolescent clients regarding the risks of injection, particularly with adolescents with a history of heroin use.

CONCLUSIONS

With these limitations and recommendations in mind, the results of this study may be used to inform substance abuse prevention and treatment efforts and serve as the basis for future research on heroin use initiation.



The majority of females in this study were introduced to heroin by a male friend or boyfriend. Therefore, prevention and treatment programs for adolescent females should present information and skills to successfully abstain from substance use when offered by a male peer. This study found that over two-thirds of peer influence to use heroin occurred in an opposite-gender relationship, yet research in the area of substance use initiation has largely focused on same-gender influence. This study also demonstrated that a large number of adolescents may use heroin through injection at some point in their history of use. Using through injection just once can increase the risk for a variety of dangers, including overdose, advanced addiction, and the transmission of HIV and hepatitis. It is estimated that up to half of new HIV infection cases in the United States may be occurring among new injectors (33). The results of this study demonstrate the importance of making the risks of heroin injection known to this population.

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