

Original Research Article

A comparative study of socio demographic and clinical characteristics of heroin injectors and heroin chasers: a comparative study done in a tertiary care de-addiction center of Kashmir, India

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ABSTRACT

Background: Heroin use has intensified into a major public health concern in Kashmir, accompanied by a rising prevalence of high-risk routes of administration, particularly injecting. However, regional research comparing injectors and chasers remains scarce. This study examined the socio-demographic and clinical differences between heroin injectors, heroin chasers, and healthy controls in a tertiary de-addiction centre in Kashmir.

Methods: A cross-sectional comparative study was conducted among 50 heroin injectors, 50 heroin chasers, and 30 healthy controls recruited through purposive sampling. Participants aged ≥ 18 years meeting DSM-5 criteria for Opioid Use Disorder were assessed after withdrawal stabilization using a semi-structured socio-demographic and clinical questionnaire. Data analysis was performed in SPSS-21 using descriptive statistics, chi-square tests, and independent t-tests, with statistical significance set at $p < 0.05$.

Results: Injectors were significantly younger, less educated, and more frequently engaged in unskilled or unstable occupations than chasers and controls ($p < 0.001$). Injectors showed earlier onset of heroin use, longer illness duration, and more treatment attempts. Both groups had comparable legal involvement (25%). High-risk behaviors were far more common among injectors: 80% reused needles, 72% shared needles, 50% were hepatitis-positive, and 34% reported overdose. Medical complications such as abscesses and skin infections occurred only among injectors.

Conclusions: Heroin injectors represent a high-risk subgroup with greater addiction severity and substantially elevated medical and behavioural harms. These findings highlight the need for targeted harm-reduction interventions, early identification of injecting-related risks, and preventive strategies to reduce transition from chasing to injecting within the Kashmir region.

Keywords: Heroin, Chasers, Injectors, Kashmir, Opioid use disorder, Socio-demographics, Clinical variables

INTRODUCTION

Opioid use disorder indicates an uncontrollable, prolonged self-administration pattern of any sort of opioids not being used for genuine medical reasons or is taken at doses exceeding the prescribed dose needed for any medical illness, with continuous use of opioids despite having

significant substance related problems.¹ As per the report on Magnitude of Substance Abuse in India, 2019 by NDDTC, in past one year a population of 23 million in the age group of 19-75 years i.e., 2.06 percent of the population had used opioids. Overall, in the country, the prevalence of current use of any opioid was 2.06% Heroin being the most used opioid in India (1.14%).² Heroin can

be administered in various ways, including oral ingestion, intranasal insufflation (snorting), inhalation, and intravenous (IV) injection. The route of administration significantly affects the onset, intensity, and duration of the drug's effects, as well as the risk of adverse consequences.³

Heroin use in the Kashmir Valley has escalated into a significant public health crisis, with recent studies highlighting alarming trends in prevalence, demographics, and associated health complications. A 2022 survey conducted across ten districts in Kashmir revealed that approximately 2.23% of the population is dependent on opioids, equating to an estimated 52,404 individuals. Notably, 61.3% of these individuals, about 32,097 people, engage in intravenous heroin use. The economic burden of heroin addiction is substantial, with users spending an average of INR 88,183.58 (~USD 1,065) monthly on heroin.⁴

Despite the magnitude of the problem, there is limited region-specific research comparing the socio-demographic and clinical profiles of heroin injectors and chasers in Kashmir.

METHODS

This cross-sectional comparative study was conducted at the Drug De-addiction Centre of Institute of Mental Health And Neurosciences, Government Medical College, Srinagar and included 50 heroin injectors, 50 heroin chasers, and 30 age-matched healthy controls recruited through purposive sampling. Sample was collected over a time period of one year from June 2024 to June 2025.

Inclusion criteria

Male participants aged 18 years and above meeting DSM-5 criteria for opioid use disorder were included after

completing the acute withdrawal phase, verified using the Clinical Opiate Withdrawal Scale, while controls were screened using GHQ-12 to ensure absence of psychiatric morbidity.

Exclusion criteria

Individuals with neurological disorders, intellectual disability, severe psychiatric illness, or unstable medical conditions.

After obtaining informed consent, socio-demographic and clinical information was collected using a semi structured questionnaire. All assessments were conducted individually in controlled settings. Data was analyzed using SPSS (Version .21) with descriptive statistics, t-tests and Chi-square tests, adopting a significance threshold of $p < 0.05$.

RESULTS

Demographic features of the clinical sample (continuous variables) of patients with heroin use disorder (HUD) and healthy controls are represented in table no. 1. 50% (n=50) of the sample were heroin injectors, 50% (n=50) were heroin chasers and 30% (n=30) of the sample were healthy controls. Significant difference was found between mean age of heroin injectors that was found out to be 35.53 with standard deviation of 6.677 while mean age of heroin chasers that was found to be 28.02 with standard deviation 5.370 and mean age of healthy controls of 24.37 with standard deviation of 4.140. Significant difference was found between mean income of heroin injectors that was found to be 27480.00 with standard deviation of 26960.470 while as the mean income of heroin chasers was found to be 54080.00 with standard deviation of 77879.771 and the mean income of healthy controls was found out to be 22100.00 with standard deviation of 43106.404 (Table 1).

Table 1: Socio-demographic (continuous) variables among heroin injectors, chasers and healthy controls.

Variables	Mean±SD		X ² /Fisher	Df	P value	
Age (years)	IV	Chasers	Control	13.097	2	0.001***
	25.53±6.677	28.02±5.370	24.37±4.140			
Income of patient	IV	Chasers	Control	15.979	2	0.000***
	27480.00±26960.470	54080.00±77879.771	22100.00±43106.404			

Note: IV–Intravenous; *** Significant at 0.001 level.

Table 2 compares the socio-demographic (discrete) variables between heroin injectors, chasers and healthy controls. In terms of their domicile, among the injectors group were 48% were from rural backgrounds while 52% from urban and in chasers' group 36.0% were from rural backgrounds and 64.0% were from urban backgrounds and 23.3% from rural backgrounds and 76.7% were from urban backgrounds. With respect to family type, nuclear family was reported by 60% of heroin injectors, 80.0% of heroin chasers and 76.7% of healthy controls whereas joint family was reported by 40.0% of heroin injectors, 20.0% of heroin

chasers and 23.3% of healthy controls. In terms of the marital status, married population was found to be 34.0% in heroin injectors, 36% in heroin chasers and 10% in healthy controls whereas unmarried population was found to be 64.0% in heroin injectors and 64% in heroin chasers and 10% in healthy controls while 2% of heroin injectors were divorced/ separated.

In the education status, 16.0% had a primary level of educational qualification, 30.0% had an educational qualification of Grade 10, 42.0% had an qualification of

Grade 12, 12.0% were graduated and 0.0% belonged to the professional category in heroin injectors whereas in the education status of heroin chasers, 4.0% had a primary level of educational qualification of Grade 8, 30.0% had an educational qualification of Grade 10, 26.0% had an qualification of Grade 12, 38.0% were graduated and 2.0% belonged to the professional category and in the education of healthy controls 53.3% had an educational qualification of Grade 10 and 46.7% belonged to the professional category. In terms of occupational status, 28.0% were in professional category, 8.0% were in semi-professional category, 8.0% were in clerical, shop owners, 32.0% were skilled workers, 12.0% were semi-skilled, 6.0% were

unemployed, 10.0% were students and 4.0% belonged to the unskilled category in heroin injectors whereas in heroin chasers 38.0% were in professional category, 6.0% were in semi-professional category, 8.0% were in clerical, shop owners, 30.0% were skilled workers, 2.0% were semi-skilled workers and 4.0% were unemployed, 6.0% were students and 6.0% were from the unskilled category; among healthy controls 46.7% were in professional category, 53.3% were students. There is significant difference between injectors, chasers and healthy controls at a significance level of 0.001 with respect to educational qualifications and occupational status (Table 2).

Table 2: Socio-demographic (discrete) variables of heroin injectors, heroin chasers and healthy controls.

Variables	N (%age)			X ² / Fisher Exact	Df	P value
Gender (%)	IV	Chasers	Control			
Male	50 (100)	50 (100)	30 (100)	-	-	-
Female	0 (0)	0 (0)	0 (0)			
Locality (%)	IV	Chasers	Control			
Rural	24 (48.0)	18 (36.0)	7 (23.3)	4.957	2	0.084
Urban	26 (52.0)	32 (64.0)	23 (76.7)			
Family type (%)	IV	Chasers	Control			
Nuclear	30 (60.0)	40 (80.0)	23 (76.7)	5.415	2	0.067
Joint	20 (40.0)	10 (20.0)	7 (23.3)			
Marital status (%)	IV	Chasers	Control			
Unmarried	32 (64.0)	32 (64.0)	27 (90.0)	8.797	4	0.066
Married	17 (34.0)	18 (36.0)	3 (10.0)			
Divorced/separated	1 (2.0)	0 (0.0)	0 (0.0)			
Education (%)	IV	Chasers	Control			
Primary	8 (16.0)	2 (4.0)	0 (0.0)	40.457	8	0.000***
Matric	15 (30.0)	15 (30.0)	0 (0.0)			
12 th	21 (42.0)	13 (26.0)	8 (26.7)			
Graduation	6 (12.0)	19 (38.0)	19 (63.3)			
Professional	0 (0.0)	1 (2.0)	3 (10.0)			
Occupation (%)	IV	Chasers	Control			
Unskilled worker	2 (4.0)	3 (6.0)	0 (0.0)	54.822	14	0.000***
Student	5 (10.0)	3 (6.0)	16 (53.3)			
Unemployed	3 (6.0)	2 (4.0)	0 (0.0)			
Semi-skilled worker	6 (12.0)	1 (2.0)	0 (0.0)			
Skilled worker	16 (32.0)	15 (30.0)	0 (0.0)			
Clerical, shop owner	4 (8.0)	4 (8.0)	0 (0.0)			
Semi-Professional	4 (8.0)	3 (6.0)	0 (0.0)			
Professional	10 (20.0)	19 (38.0)	14 (46.7)			

Note: IV- Intravenous; ***significant at 0.001 P value.

Table 3 shows the comparison between clinical data (discrete) variables between heroin injectors and heroin chasers. In terms of mode of administration 50% of the patients chased and 50.0% used intravenous route of

administration. In terms of legal history, among the heroin injectors 24.0% had a legal history and among the heroin chasers 26.0% had a legal history. In respect to heroin injectors, the hepatitis serology was positive for 50% of

the participants. In terms of patterns of needle use, 80% had reused needles in heroin injectors and 72% among heroin injected reported sharing needles. 12% of heroin injectors had developed abscesses and 24% had skin complications associated with heroin injection use. 34.0% among heroin injectors reported an history of overdose.

Significant differences were found between heroin injectors and heroin chasers at a significance level of .001 with respect to route of administration, hepatitis serology, needles reused, needles shared, skin complications and overdoses. No significant differences ($p>0.09$) were found between other variables (Table 3).

Table 3: Comparison of clinical data (discrete) of heroin injectors and heroin chasers.

	Patients with ODS N (%age)		X ² /Fisher Exact	Df	P
Route of administration	IV	Chasers			
	50	50	-	1	0.000**
Legal history	IV	Chasers			
Yes	12 (24.0)	13 (26.0)	0.053	1	0.817
No	38 (76.0)	37 (74.0)			
Hepatitis serology	IV	Chasers			
Positive	25 (50.0)	0 (0.0)	33.333	1	0.000***
Negative	25 (50.0)	50 (100.0)			
Needles reused	IV	Chasers			
Yes	40 (80.0)	0 (0.0)	66.667	1	0.000***
No	10 (20.0)	50 (100.0)			
Needles shared	IV	Chasers			
Yes	36 (72.0)	0 (0.0)	20.482	1	0.000***
No	14 (28.0)	50 (100.0)			
Abscesses	IV	Chasers			
Yes	6 (12.0)	0 (0.0)	6.383	1	0.012
No	44 (88.0)	50 (100.0)			
Skin complication	IV	Chasers			
Yes	12 (24.0)	0 (0.0)	13.636	1	0.000***
No	38 (76.0)	50 (100.0)			
Overdose	IV	Chasers			
Yes	17 (34.0)	0 (0.0)	20.482	1	0.000***
No	33 (66.0)	50 (100.0)			

Note: IV- Intravenous: ***significant at 0.001 P value.

Table 4 shows comparison of clinical data (continuous) variables between heroin injectors and heroin chasers. In terms of age of onset, the mean score was 21.24 with standard deviation of 5.662 in heroin injectors while in heroin chasers the mean score was 23.78 with standard deviation of 6.126. In terms of duration of illness, the mean score was 50.20 with standard deviation of 32.207 for heroin injectors while in heroin chasers the mean score was 44.78 with standard deviation of 29.472. In terms of no. of relapses, the mean score was 1.98 with standard deviation of 2.113 while in heroin chasers the mean score was 2.24

with standard deviation of 2.897. In terms of duration of abstinence, the mean score was 120.62 with standard deviation of 330.699 while in heroin chasers the mean score was 181.62 with standard deviation of 229.225. in terms of no. of treatments, the mean score was 0.90 with 1.074 while in heroin chasers the mean score was 0.54 with standard deviation of 0.838. Highly Significant differences were found between heroin injectors and heroin chasers at a significance level of 0.001 with respect to no. of treatments. Significant differences were found between heroin injectors and heroin chasers at a significance level of 0.05 with respect to age of onset (Table 4).

Table 4: Comparison of clinical data (continuous) variables between heroin injectors and heroin chasers.

Variables	Patients with ODS (n=50)		t- value	Df	P
	IV	Chasers			
Age of onset	21.24±5.662	23.78±6.126	-2.153	98	0.034***
Duration of illness (months)	50.20±32.207	44.78±29.472	0.878	98	0.382***
No. of relapses	1.98±2.113	2.24±2.897	0.829	98	0.409
Duration of abstinence (days)	120.62±330.699	181.62±229.225	1.429	98	0.156
No. of treatments	0.90±1.074	0.54±.838	3.313	98	<0.001***
Injections per day	4.7±3.989	0.00±0.000			
Needles shared	0.128±0.454	0.00±0.000			

Note: IV- Intravenous; ***significant at 0.001 P value.

DISCUSSION

The present study compared the sociodemographic characteristics and clinical variables of heroin injectors, heroin chasers, and healthy controls, offering important insights into the evolving pattern of opioid use in Kashmir.

Sociodemographics of heroin injectors and heroin chasers

A widely accepted and applied concept by Margaret White head and Goran Dahlgren (1991), posits that lifestyle factors that are somewhere also shaped by the society we live, the kind of socio-economic status we have and all our socio-cultural elements. This model points out to the need to assess the socio-demographics of PWUD in order to uncover the potential factors involved, which can also help in understanding the growing statistics of substance use and can help in formulating preventive measures.⁵

An important finding in the present study was that the mean age of heroin chasers (28.02±5.370) was higher than that of heroin injectors (25.53±6.677) and healthy controls (24.37±4.140). This can be possibly due to: First, injecting drug use is consistently associated with earlier initiation of opioid use, faster escalation of tolerance, and greater exposure to high-risk peer networks, which often draw younger users into injecting behaviours at an earlier age.⁶ Second, older users may prefer chasing due to perceived safety, lower stigma, or the ability to maintain functionality for longer, delaying treatment entry and thus raising the mean age of chasers at clinical presentation and cultural perceptions regard injecting as a more severe or advanced stage of drug use.^{6,7} Thirdly injecting is linked to rapid physiological deterioration, severe withdrawal symptoms, and medical complications such as abscesses, hepatitis, and overdose, often prompting earlier treatment-seeking among injectors and contributing to their lower mean age at presentation.⁸ Similar findings were seen in a

research conducted in Kashmir where the average age of subjects involved in opioid dependence was 27.64±4.60.⁹

In terms of locality, both the groups predominantly belonged to urban areas, but majority of chasers belonged from urban areas. One possible explanation could be that the hospital where the sample was collected is located in an urban area that made it more accessible for patients living in urban areas to seek treatment in this center. Also as the withdrawals are very severe and distressing in heroin use, heroin users tend to reach out to nearby treatment facilities.¹⁰ Moreover, in the Indian context the NACO guideline identifies ‘feasibility of daily attendance’ as a core criterion for initiating OST.¹¹

Majority of heroin injectors (60%) as well as heroin chasers (80%) and healthy controls (76.7%) lived in nuclear families. This could have a possible explanation because families tend to have more of a nuclear setup with both parents working, which somewhere puts children off the radar of regular supervision and being alone. So, children of nuclear families are more prone to use substances. Studies have found similar findings, one research conducted by Daniel et al (2021) points that prevalence of substance use was seen more in adolescents of nuclear family.¹² Results pointed out that 64% of both the groups i.e., heroin injectors and chasers were unmarried. That indicates that unmarried population were more inclined towards heroin use, it also indicates that marital status added to the responsibilities of family which somewhere acted as a barrier towards consuming drugs. These findings align with evidence that marriage is a protective factor and it leads to decline in deviant or socially disapproved behaviours such as illicit drug use.¹³ Heroin chasers were generally better educated than injectors, with more graduates and professionals among chasers, whereas injectors more often had only high school education. Educational attainment was highest in the control group. Possible explanation could be that

individuals with higher education may have better awareness of health risks associated with injecting (HIV, HCV, abscesses), and may therefore delay or avoid transitioning to injecting. Lower-educated individuals may lack such knowledge or may have less access to harm-reduction messaging and lower education often correlates with lower income or unstable employment. Injecting heroin is often regarded as a more cost-efficient route (less drug quantity required for equivalent effect) and may be adopted by socioeconomically disadvantaged users seeking high at lower cost.¹⁴ This pattern is consistent with prior research in India and elsewhere showing that lower educational attainment is associated with injecting drug use (IDU) behaviour. For instance, in a multisite Indian study of opioid users, lower education was associated with increased likelihood of injection transition.¹⁵

A clear occupational variation was noted across groups. Injectors were predominantly in skilled (32%) and semi-skilled or unstable occupations, with fewer professionals (20%). Chasers demonstrated higher occupational functioning with equal proportions in professional and skilled roles. Controls showed the highest stability, being mostly students or professionals. The occupational differences observed across groups may be explained by the interplay of economic instability, peer influence, and functional demands. These findings are consistent with a growing body of Indian and international literature demonstrating a close association between occupational instability and the severity of heroin use. A multisite study from India reported that individuals engaged in informal, irregular, or low-skilled occupations had significantly higher odds of transitioning to injecting drug use compared to those with stable employment.¹⁵ Non-injecting heroin users, on the other hand, tend to demonstrate better occupational functioning. Indian and global studies consistently show that chasers or smokers often maintain employment, student status, or semi-skilled roles at higher proportions compared to injectors.¹⁶

Clinical variables associated with heroin injectors and heroin chasers

The mean age of onset for heroin use was 21.24 years among injectors versus 23.58 years among chasers, a difference that reached statistical significance ($p=0.01$). Similar findings were reflected by a hospital-based Indian sample of opioid injectors reported a mean age at initiation of injection of 21.77 ± 5.65 years.¹⁷

In the present study, heroin injectors demonstrated a longer duration of illness (mean=50.20 months) compared to chasers (mean=44.78 months), suggesting a more entrenched and persistent pattern of opioid dependence in the injecting group. Although chasers exhibited a slightly higher number of relapses (2.24 ± 2.89) than injectors (1.98 ± 2.11), injectors reported a higher number of prior treatment attempts (0.90 ± 1.07 vs. 0.54 ± 0.83), indicating greater clinical severity and repeated treatment engagement among those transitioning to the injecting

route. Duration of abstinence also varied between groups, with chasers maintaining longer abstinent periods (120.63 ± 330.69 days) than injectors (181.62 ± 229.22 days), a trend consistent with research showing that injecting heroin use is associated with poorer treatment outcomes and difficulty sustaining abstinence.¹⁵

The longer duration of illness observed among heroin injectors may reflect the well-established association between injecting and greater addiction severity, faster tolerance development, and more entrenched patterns of opioid use. Studies show that individuals who transition to injecting typically experience a more rapid escalation in dependence and are more likely to remain in prolonged cycles of use.¹⁵ The slightly higher number of relapses among chasers may be attributable to their lower clinical severity, making them more likely to attempt abstinence and relapse repeatedly; injectors, being more severely dependent, often lapse quickly and may not accumulate as many discrete relapse episodes over time.¹⁸ Also, injectors exhibited a higher number of treatment attempts, consistent with evidence that people who inject drugs are more likely to cycle repeatedly through treatment, experience greater withdrawal severity, and face more complications requiring medical contact.¹⁹ Collectively, these patterns suggest that chasers demonstrate fluctuating but less severe use trajectories, while injectors follow a more chronic, treatment-engaged, and clinically severe pathway.

Both heroin injectors and chasers demonstrated comparable rates of legal involvement in the present study (24% and 26%, respectively). Several studies have shown that criminal behaviour among opioid users typically stems from factors such as dependence-driven economic pressure, procurement-related offences, and the influence of high-risk social networks patterns that occur across both injecting and non-injecting users. Moreover, research indicates that the intensity of craving, withdrawal severity, and the need for regular drug supply, rather than the method of using heroin, are the primary drivers of drug-related crime.²⁰ The lack of difference seen in our findings underscores that criminal justice involvement appears to be a general correlate of heroin use rather than a marker of a specific mode of administration.

A marked disparity emerged between the two groups regarding high-risk medical and behavioural outcomes. Half of the intravenous (IV) users tested positive for hepatitis, whereas none of the chasers showed seropositivity. This pronounced difference reflects the well-documented association between injecting practices and blood-borne viral transmission. Such vulnerability is reinforced by the high-risk behaviours reported among injectors in our sample: 80% engaged in needle reuse and 72% reported needle sharing, both of which are major drivers of hepatitis B/C and HIV transmission.^{21,22} Physical complications were also substantially more common among IV users. Abscesses occurred in 12% and skin complications in 24% of injectors consistent with

prior evidence linking injecting with soft-tissue infections, vascular injury, and bacterial contamination related to unsafe injection environments.²³

Perhaps the most concerning finding was the markedly elevated overdose risk among injectors, with 34% reporting a prior overdose compared to none of the chasers. Injecting is known to deliver a larger amount of heroin more rapidly into the bloodstream, increasing the likelihood of respiratory depression, accidental high dosing, and toxicity, mechanisms repeatedly shown to raise overdose risk relative to smoking or chasing.²⁴ Taken together, these findings highlight that injecting heroin is associated with a constellation of high-risk behaviors and medical consequences, whereas chasers show significantly lower exposure to these harms due to the inherently less hazardous nature of non-injecting routes.

Limitations

This cross-sectional, single-centre study using purposive sampling limits causal inference and generalizability beyond treatment-seeking populations. The modest sample size, inclusion of only male participants, and reliance on self-reported clinical and behavioural data may introduce bias. Additionally, psychiatric comorbidities and infections beyond hepatitis were not comprehensively assessed.

CONCLUSION

Heroin injectors and chasers in Kashmir differ significantly in their socio-demographic and clinical profiles. Injectors were younger, less educated, more often in unstable occupations, and showed greater illness severity. They also demonstrated substantially higher rates of hepatitis seropositivity, needle-related risks, skin complications, and overdose. Chasers showed relatively better socio-occupational functioning and lower medical risk. These findings highlight the need for targeted harm-reduction strategies, early screening, and differentiated treatment approaches for high-risk injecting users, alongside preventive interventions for non-injecting users to reduce transition to injecting.

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