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Patterns of Polydrug Use Among Ketamine Injectors in New York City

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Abstract

Polydrug use is an important public health issue since it has been linked to significant adverse health outcomes. Recently, club drugs, including ketamine and other drugs used in dance/rave scenes, have been identified as key substances in new types of polydrug using patterns. While seemingly a self-explanatory concept, “polydrug” use constitutes multiple drug using practices that may impact upon health risks. Ketamine, a club drug commonly administered intranasally among youth for its disassociative properties, has emerged as a drug increasingly prevalent among a new hidden population of injection drug users (IDUs). Using an ethno-epidemiological methodology, we interviewed 40 young (<25 years old) ketamine injectors in New York during 2000–2002 to describe the potential health risks associated with ketamine and polydrug use. Findings indicate that ketamine was typically injected or sniffed in the context of a polydrug using event. Marijuana, alcohol, PCP, and speed were among the most commonly used drugs during recent ketamine using events. Polydrug using events were often quite variable regarding the sequencing of drug use, the drug combinations consumed, the forms of the drug utilized, and the modes of administering the drug combinations. Future research should be directed towards developing a more comprehensive description of the risks associated with combining ketamine with other drugs, such as drug overdoses, the transmission of bloodborne pathogens, such as HIV and HCV, the short- and long-term effects of drug combinations on cognitive functioning, and other unanticipated consequences associated with polydrug use.

Keywords

ketamine; polydrug use; injection drug use; high-risk youth

Introduction

Polydrug use is an important public health issue since it has been linked to significant adverse health outcomes, such as drug overdose (Coffin et al., 2003), increased risk of exposure to bloodborne pathogens, such as HIV and Hepatitis C (Peters, Davies and Richardson, 1998), drug dependence (Leri, Bruneau, and Stewart, 2003), and decreased cognitive functioning (Dillon, Copeland, and Jansen, 2003). While polydrug use is recognized as a long-standing health risk for heroin and cocaine users, the advent of “club drugs,” such as ketamine, ecstasy, and GHB, and the development of polydrug “cocktails” (Hansen, Maycock, and Lower, 2001) containing multiple substances have raised new health concerns.

In the 1970s, research on “multiple drug use” documented patterns among young people who used various licit and illicit drugs, such as alcohol, marijuana, LSD, PCP, amphetamines, cocaine, and heroin, but largely focused on the progression towards using higher risk drugs (Single, Kandel, and Faust, 1974; Halikas and Rimmer, 1974; Kandel and Faust, 1975). In this article, “polydrug use” refers to the drug combinations consumed by an individual during a single drug using event. As we describe, a primary feature of drug using events is combining two or more drugs in a sequenced manner that is often predicated upon different drug using practices. Specifically, we describe polydrug using practices among a sample of 40 ketamine injectors, and examine particular drug using events, such as ketamine injection initiation, to describe the variability and risks involved in polydrug use within this sample. We detail the complexity associated with polydrug use by highlighting the sequencing of polydrug use, the forms of drugs consumed, and the modes of administering drugs in the context of events that combined ketamine with one of six other drugs: marijuana, alcohol, heroin, speed, ecstasy, or hallucinogens, such as LSD or mushrooms.

Ketamine and Other Club Drugs

Ketamine was developed as a human anesthetic in the early 1960s, and evolved into a recreational drug commonly sniffed in dance clubs in New York and London beginning in the early 1980s. The expansion of rave culture during the late 1980s and early 1990s coincided with reports of nonmedical ketamine use in the research literature (Dotson, Ackerman, and West, 1995; Dalgarno and Shewan, 1996). In 1999, the DEA placed ketamine into schedule III of the Controlled Substance Act (CSA), making it illegal to possess ketamine for recreational or nonmedical purposes. Recent epidemiological surveys suggest that ketamine is being injected both intravenously and intramuscularly in youth and young adult groups (CEWG 1999; CEWG 2000). The nonmedical use of ketamine impacts a wide range of functions, including memory, language, and perception (Jansen, 2001), as well as the regulation of emotions, such as fear, anger, and pleasure (Bergman, 1999). Among recreation users, ketamine is more likely to draw users into periods of dependence than any other “psychedelic” drug (Jansen, 2001), and there is strong evidence of tolerance and dependence in animal studies (Beardsley and Balster, 1987; Moreton, 1977).

While studies focusing specifically on recreational ketamine use are relatively uncommon, most indicate pervasive polydrug use among this population. Dillon, Copeland, and Jansen’s (2003) study of 100 ketamine users in Sydney, Australia, reported that 71% used ecstasy in conjunction with ketamine. Other drugs used with ketamine included marijuana, cocaine, amyl nitrate, LSD, and GHB. Additionally, 49% indicated that they had injected a drug other than ketamine. Curran and Monaghan’s (2001) study of 37 frequent and infrequent ketamine users in London indicated that all were polydrug users. Other drugs consumed during the most recent ketamine event included marijuana, alcohol, amphetamine, and ecstasy. Lankenau and Clatts’ (2002) study of 25 ketamine injectors in New York reported frequent polydrug use among the sample. Heroin, cocaine, crack, PCP, ecstasy, LSD, speed, and marijuana were all commonly used in the months prior to being interviewed. Over half of the sample used one or more of these drugs before, during, or after their most recent injection of ketamine. Additionally, over half had ever injected a drug other than ketamine, such as heroin, cocaine, or speed. Gill and Stajic’s (2000) review of ketamine positive deaths in New York between 1997 and 1999 indicated that 12 out of 15 deaths involved multidrug intoxications. The Chief Medical Examiner determined that none of these deaths were attributed to ketamine intoxication alone, but rather it was the multidrug combinations—ketamine and heroin in particular—that resulted in death.

Research focused on other club drugs, such as ecstasy, speed, and GHB, often report recreational or lifetime ketamine use among these drug using populations. Degenhardt, Darke,

and Dillon's (2002) study of 76 GHB users reported that 21% typically used ketamine with GHB, and that 54% had used ketamine within the past 6 months. A subsample of 45 crystal meth users indicated that 18% typically consumed ketamine with crystal meth, and that ketamine was commonly used in the past 6 months (Degenhardt and Topp, 2003). Parrott et al.'s (2001) study of 336 polydrug users indicated that "heavy ecstasy" users (n = 119) had the highest lifetime consumption history of ketamine compared to "low ecstasy" (n = 115) and "no ecstasy" users (n = 102). Morgan's (1999) comparison of small samples of ecstasy polydrug users (n = 25) and nonecstasy polydrug users (n = 22) reported that two users had taken ketamine with ecstasy. Topp et al.'s (1999) study of 329 ecstasy users reported that 10% had consumed ketamine within the past 6 months.

Collectively, these studies have documented important patterns of polydrug use among a variety of club drugs, including ketamine, speed, GHB, and ecstasy. Beyond describing these general patterns of polydrug use, however, other features and practices integral to polydrug use have received less attention in research studies. These other factors include: sequencing or timing of polydrug use, drug forms consumed, and mode of administration during polydrug use. As we indicate, these factors are particularly important in assessing health risks and harms associated with polydrug use.

Characteristics of Polydrug Use

Simultaneous Drug Use vs. Co-Use

During polydrug using events, users may combine or sequence their drug use in particular ways. Simultaneous drug use is mixing two or more substances together and administering them at the same time (Ellinwood, Eibergen, and Kilbey, 1976; Leri, Bruneau, and Stewart, 2003). Mixing heroin and cocaine and then shooting the combination intravenously, often referred to as a "speedball," is an example of simultaneous drug use. In contrast, co-use is the sequential administration of two or more drugs during the course of a drug using event, a particular day, or longer periods (Ellinwood, Eibergen, and Kilbey, 1976; Leri, Bruneau, and Stewart, 2003). Smoking marijuana and later ingesting a pill of ecstasy is an example of co-use. Often, users have a particular motivation for using drugs one way vs. another. For instance, simultaneous administration may be provoked by the desire to create a particular novel effect—an effect that could not be produced by either drug alone, or by taking the drugs in a sequence. Similarly, co-use may be motivated by the wish to reduce the unwanted effects of a drug by sequencing the amount of time between the first and second substance (Leri, Bruneau, and Stewart, 2003).

Drug Form

Illegal drugs are sold in a variety of forms that may include liquids, pills, capsules, powders, resins, pastes, leaves, buds, crystals, tabs, stalks, caps, and bases. A single drug type is often produced and sold in a variety of forms depending upon drug supply, available cuts, desired profits, and drug demand. For instance, ketamine is produced by pharmaceutical companies in liquid form, but most recreational consumers ultimately purchase a powder form (Jansen, 2001; Lankenau and Clatts, 2002). Similarly, speed is sold in at least four forms: powder, pill, paste, and crystal (Topp et al., 1999). Most illegal drugs are available in at least two or more forms, e.g., marijuana/hashish; powder/tar heroin; powder cocaine/crack, etc. Drug form is significant since it is often an indicator of the purity and potency of a particular drug. Additionally, drug form is important since it impacts on a user's mode of administering a drug.

Mode of Administration

Depending upon the drug form, a drug is typically administered by sniffing, smoking, inhaling, swallowing, drinking, or injecting the substance. Drugs are frequently converted from one form

to another, such as a powder or base into a solution, in order to be injected with a hypodermic syringe (Clatts, Heimer, and Abdala, 2000; Lankenau et al., 2004). Mode of administration is important since it determines the rate at which a drug is absorbed into a user's bloodstream, which impacts how quickly and how long the user feels "high" (Julien, 1992). Also, mode of administration is significant because it impacts upon risks for the transmission of bloodborne pathogens, such as HIV and Hepatitis C. Intravenous administration presents the highest risk for transmitting bloodborne pathogens (Rich et al., 1998).

Methods

This study represents an ethno-epidemiological approach to the study of drug use and health (Agar, 1997; Clatts, Welle, and Goldsamt, 2001; Clatts et al., 2002), which can be applied towards uncovering hidden populations of injection drug users who are unlikely to appear in epidemiological sentinel data, and for reporting patterns of drug use by employing both descriptive statistics and ethnographic accounts. Furthermore, this article combines the epistemological concerns and reporting techniques from epidemiology and ethnography to describe ketamine injection, polydrug using patterns, and associated health risks.

This report is part of a two-phase study of ketamine injectors conducted in New York City between September 2000 and July 2002. The Phase I data, which consisted of brief, exploratory interviews with 25 ketamine injectors ($n = 25$), detailed injection practices and risk behaviors associated with the most recent injection of ketamine (Lankenau and Clatts, 2002). While eight young people ($n = 8$) from Phase I were recruited into the Phase II sample ($n = 40$), the findings reported in this article on polydrug use are based solely upon the Phase II data.

The Phase II data was gathered by the lead author who used participant observation methods in settings containing both street-involved youth and young IDUs to develop a targeted sampling plan (Watters and Biernacki, 1989). Ultimately, we targeted three contiguous public settings in Manhattan's East Village—a park and two street scenes—to enroll a sample of ketamine injectors. While "hanging out" in these settings over a period of months, the lead author engaged young people in informal conversations about health and drug use. A series of screening questions determined which youths met the criteria for enrollment in the project.

To qualify for an interview, a youth had to meet two basic criteria: aged between 18 and 25 years old, and had ever injected ketamine. We selected 18 to 25 year olds in order to enroll young, high-risk IDUs who recently initiated injection drug use. Regarding the drug use history criterion, we spoke to dozens of youth who had sniffed ketamine but had never injected ketamine. Hence, these young people were not enrolled into the sample. Two persons who met both age and drug use history criteria refused to participate in the study.

After giving their consent, participants were administered a tape-recorded, semi-structured survey consisting of both open- and closed-ended questions that focused on the details of particular ketamine using events as well as important demographic characteristics. Prior to being interviewed, all subjects signed a written consent form approved by an institutional review board (IRB) and each received \$20 for participating in the study.

As indicated above, the interview focused on specific drug using events that included ketamine injection initiation, most recent ketamine injection, and most recent ketamine sniffing event. Additionally, questions about polydrug use were included in each series of event-focused questions, such as "Were you using any other drugs before (or during or after) that injection of ketamine?" "Which drugs?" "How did that drug combination make you feel?" All of our data on polydrug use are based upon these types of open-end questions. Lastly, interviewees were asked open-ended questions about drug use during the previous day. These questions

were designed to understand how recent drug use compared to the detailed ketamine event-based questions.

Findings

Demographic Characteristics

Table 1 presents demographic characteristics of this sample of ketamine injectors. The median age at interview was 21 years old with an age range of 18 to 25 years old. While the total sample identified predominantly as male, white, and heterosexual, it is notable that women and youth of color were represented. Over two-thirds obtained a high school diploma, received a G.E.D., or attended some college. Over one-third were homeless at interview, while approximately three-quarters had been homeless at some point during their lifetime. Over one-third panhandled as a primary means of earning money. Selling drugs, or participating in the informal economy, such as promoting concerts or making jewelry for off-the-books earnings, were also common sources of income. Participating in the formal economy, such as working as a waiter or stockboy, was slightly more common than being unemployed. Hence, the majority of the sample was actively involved in the street economy at the time of interview.

Additionally, Table 1 indicates that nearly three-fifths of the sample initiated injection drug use with ketamine. We refer to new IDUs who initiated injection drug use with ketamine as “ketamine initiates.” Conversely, over two-fifths of the sample initiated injection drug use with another drug, such as heroin or cocaine. We refer to IDUs who initiated with a drug other than ketamine as “Other Initiates.” All “Other Initiates” later transitioned into injecting ketamine. We include this distinction between “Ketamine Initiates” and “Other Initiates” throughout the analysis since previous findings (Lankenau and Clatts, 2004) indicate that “Other Initiates” were often older, more likely to be homeless, and more likely to be experienced injection drug users. For both Ketamine Initiates and Other Initiates, the phrase “ketamine injection initiation” refers to the events and practices that constitute an injector’s first shot of ketamine.

Patterns of Polydrug Use

Polydrug use during ketamine events was typical among this sample. As Table 2 indicates, nearly two-fifths used ketamine singly at ketamine injection initiation (“none” category), meaning that the remaining three-fifths practiced polydrug use during particular events. Including ketamine, nearly one-quarter used three or more drugs at initiation (not shown in table). Marijuana was the most common drug at initiation followed by alcohol, LSD, PCP, speed, ecstasy, and heroin. During the most recent ketamine injection, three-fifths used another drug in addition to ketamine while 11% used three or more drugs. Marijuana and alcohol were the drugs most commonly combined with ketamine at the most recent injection followed by PCP, LSD, speed, heroin, and ecstasy. During the most recent ketamine sniffing event, nearly two-thirds combined ketamine and another drug while under one-fifth used three or more drugs. Alcohol was most common followed by marijuana, PCP, heroin, cocaine/crack, GHB, ecstasy, and speed. Considering ketamine injection events alone, over four-fifths of the sample practiced polydrug use at either ketamine injection initiation, the most recent ketamine injection event, or both.

Generally, youths who used ketamine singly reported more positive experiences compared to youths who practiced polydrug use. For instance, during the most recent ketamine injection event ($n = 35$), nearly three-quarters of the 14 injectors who injected ketamine singly viewed the experience as “good” or “fun.” In contrast, approximately one-quarter of the 21 injectors who practiced polydrug use described the experience as “good” or “fun.” None of the ketamine using events reported—whether involving polydrug use or not—required hospitalization or resulted in an acute medical crisis, such as a drug overdose. However, many reported

frightening episodes after injecting ketamine, and these were perceived as a crisis that passed once the effects dissipated.

Ketamine using events were frequently unplanned. For instance, three-quarters of ketamine injection initiations were unplanned compared to nearly one-quarter of most recent ketamine injections. As the following accounts indicate, much of the reported polydrug use was a result of unexpected opportunities to use ketamine after having already consumed other drugs. In other instances, youths in the sample purposefully co-used or simultaneously used ketamine with another substance to achieve a desired effect.

Before providing specific accounts of polydrug use, it is worth indicating that drug form and modes of administering ketamine alone can produce different experiences apart from co-using or simultaneously using ketamine with another drug as this 20-year-old biracial female and Other Initiate describes:

The difference between snorting and injecting it [ketamine] are greater than I've felt with any other drug. It's almost a completely different drug. I find that when you snort it you get a rushy kind of feeling and your perception is a little bit fucked up. When you shoot it, your world is completely different. One time, I shot it in a small bathroom in somebody's basement, and within seconds the bathroom felt like the size of a football field. I couldn't find the door to get out. It was a crazy experience.

We now report specific polydrug using events that involved ketamine and at least one other drug.

Marijuana

Apart from ketamine, marijuana was the most commonly reported drug in this sample—even more frequently reported than alcohol. As Table 2 indicates, youths frequently smoked marijuana during ketamine using events. For instance, over-one quarter smoked marijuana at ketamine injection initiation. The common practice of smoking marijuana is indicated by the fact that over one-third reported marijuana use on the day prior to being interviewed.

For many youth, co-using marijuana with ketamine was an unremarkable event since smoking marijuana was a common, everyday practice as this 25-year-old, Latino male and Ketamine Initiate suggests: *"Weed is like a cigarette. That's all day, everyday."*

Consequently, many youths smoked marijuana before or after injecting ketamine without much consideration for a drug interaction. In addition to co-using the two substances, one youth—a 21-year-old, white female and Other Initiate—reported simultaneous ketamine and marijuana use. As she indicates, she and two friends smoked the combination while also injecting heroin in an apartment in San Francisco:

The last time I used ketamine we were smoking the stuff and shooting heroin. The K was in powder form and we just added it to some weed. It was kind of weird, tweeky. Totally different from shooting it—less intense.

While simultaneous ketamine use and marijuana smoking was rarely reported, factoring in drug form and mode of administration demonstrates the potential variability in polydrug using practices. Overall, none of the youth who reported combining only marijuana and ketamine indicated any negative side effects from the drug mixture.

Alcohol

Following marijuana, alcohol was the second most commonly reported drug used in combination with ketamine. As Table 2 indicates, combining alcohol and ketamine was

somewhat more common during sniffing events compared to injecting events. Additionally, nearly one-third reported using alcohol on the previous day.

Significantly, ketamine and alcohol is a potentially lethal combination, since both drugs depress the central nervous system. While several youth reported disturbing effects from combining ketamine and alcohol, none reported an overdose requiring medical attention. Like marijuana, alcohol was often part of the everyday repertoire of available substances that might precede or follow ketamine use. Here, a 19-year-old, Latino male and Ketamine Initiate indicated that he found co-using alcohol and ketamine enhanced the effects particularly when sniffing a powder form of the drug:

When I sniff K, I like to drink beer because I need a lot to get where I want to be. When I'm doing little bumps and drinking it hits you much harder. It's something to do with the K and liquor. Basically, you get more fucked up. I don't do anything else when I boot it. Maybe, I'll smoke a dip [cigarette and PCP] if it's around, but usually I don't.

Preparing powder ketamine for injection, which requires mixing or “cooking” the drug with a liquid, presents the possibility of simultaneously using ketamine and alcohol as this 18-year-old, biracial male and Ketamine Initiate explains:

Sometimes we'd prepare the powder [ketamine] with alcohol. You put three drops of liquor—like vodka—and cook it. I never liked it, but I did it one time. It makes you like jump in a way. I don't like it. It fucks with the K.

While injecting the combination of ketamine and alcohol was rarely reported, it demonstrates again that different drug forms, such as mixing a powder and liquid, may impact upon mode of administration and the sequencing of polydrug using practices.

Heroin

Heroin use during ketamine using events was somewhat uncommon, as Table 1 indicates, though more frequent during ketamine sniffing events compared to injecting events. However, one-quarter of the sample reported heroin use on the previous day (none reported co-using heroin and ketamine). Compared to heroin, only alcohol and marijuana were consumed more frequently on the previous day.

Among this sample, over one-quarter began their injection drug use career with an opiate, such as heroin or morphine. Over time, all of these young IDUs transitioned into injecting ketamine. Within this subgroup, one youth injected a mixture of heroin and ketamine during the most recent ketamine injection event. Here, this 23-year-old, white male and Other Initiate describes how he simultaneously injected ketamine and heroin while at an apartment in Manhattan:

The last time I injected ketamine I was with two friends and we mixed it with heroin to increase the high. It's crazy—we mix a whole bunch of stuff everyday. That time, both the K and heroin were in powder form. I mixed them in a cooker, and then injected it in my vein. I did like five shots. The feeling is hard to explain—like a bit of the heroin with the visuals off the K, too. The heroin lasts for about an hour, and the K lasts for about 3 hours. The first time I did that [combination] was in Savannah [Georgia].

Mixing heroin and ketamine is a risky combination since both drugs depress the central nervous system, which controls the respiratory and circulatory systems (Jansen, 2001). In particular, combining both drugs during a single drug using event increases the potential for a drug overdose (Gill and Stajic, 2000).

As Table 2 suggests, heroin use was common among this sample of ketamine injectors. While many Other Initiates who initiated injection drug use with heroin continued to use heroin, two Ketamine Initiates transitioned into sniffing heroin, while three Ketamine Initiates later transitioned into injecting heroin. Here, a 20-year-old, Latino male described his first injection of heroin which occurred at an apartment in New York 6 months after he initiated injection drug use with ketamine:

My friend had just gotten into it, and he had a couple of bags so I bought a bag from him. I was so shaken up because it was like a bag of dirt—that's what it looked like. But I really wanted to try it—I always had. I had a needle on me just in case I came across something cool. I did a quarter of it [bag] in my vein. I knew how to shoot in my vein because I tried shooting K [ketamine] in my vein. I already knew how to hit my vein so I went ahead and I did that. I was like, this is the feeling that I guess I've been looking for. But I think K is so much better. Heroin just makes you like so sleepy, but it feels good. There's like a pressure in the back of your head that it pushes against your eyes and it makes your eyes roll back, and it feels so good.

As this narrative indicates, the youth's previous experience injecting ketamine is significant since he already possessed a syringe, and because he knew how to self inject intravenously based upon his ketamine injecting practices. Also, his reaction to the drug form is noteworthy; the dirty appearance of heroin contrasted markedly with the more hygienic look of liquid or powder ketamine.

Speed

Speed was infrequently combined with ketamine injection or sniffing events, and none of the sample reported using speed on the previous day. Less than one-tenth of the sample used speed during ketamine injection initiation. However, these same youth also combined ketamine and speed during the most recent ketamine injection. Here, a 21-year-old, white male and Other Initiate describes his ketamine injection initiation at a house in Los Angeles and how he co-used with speed:

That night [the first ketamine injection] I mainlined [IV] two shots of K [powder]. I did one and it became really weird. I felt like I was reborn in the world and I didn't know where I was. And then later that night no one wanted to do anymore because it was fucked up shit. I did another one because I was tweaking [on speed] too. I smoked it [speed] but usually I shoot it. It was dirty shit so I just smoked it. Later, I did another shot of K.

The same youth described his most recent injection of ketamine at a house in San Diego which followed an injection of speed. As he indicates, co-using speed and ketamine via injection created an anxious experience:

The last time, I did a shot of glass [speed]—a little under half a gram—and then I mainlined a shot of K [powder]. I don't like snorting stuff that much. It was pretty crazy, man. If I didn't do all the glass before it would've been better. I was paranoid, freaking out. I was breathing hard. I just wanted the K experience to end. I forgot how it felt. It made my heart race. So, I was a little worried about my heart or something or other.

Ketamine was also reported to calm the effects of speed. Here, a 24-year-old, white female and Ketamine Initiate, described how injecting liquid ketamine at her home in Brooklyn helped her sleep after sniffing speed:

The last time I injected K, I was using [sniffing] meth. I was packing my house and I needed to like chill out and go to sleep. My friends came by with it. I'm glad they did cause I needed something to calm me down. I was going nuts. I did like five shots

of [liquid] about one cc each [in my muscle]. They made me go to sleep. It did the job.

These three narratives highlight different drug forms, different modes of administering each drug, and a range of intended effects across co-using these two drugs. In the first narrative, a young man described intravenously injecting liquid ketamine, smoking powder speed, and injecting more liquid ketamine. Next, the same young man detailed injecting crystalized methamphetamine, i.e., “glass,” and then intravenously shooting powder ketamine. Lastly, a young woman described sniffing speed and injecting liquid ketamine intramuscularly. Collectively, these narratives—using just ketamine and speed as examples—point to wide variability in polydrug using practices.

Ecstasy

Ecstasy was co-used with ketamine most commonly during injection initiation and less frequently during most recent ketamine injection event, or most recent event sniffing ketamine. Additionally, youth infrequently consumed ecstasy on the previous day, indicating that the drug was not commonly used among this sample.

Drug use, while often purposeful and rational, also occurs spontaneously, which may lead to co-using substances. Here, a 21-year-old, white male, and Other Initiate describes how he unexpectedly initiated ketamine injection in a park in Manhattan after consuming ecstasy earlier in the day. Significantly, since he injected heroin, he possessed a syringe, which then facilitated initiation into ketamine injection upon receiving a supply of liquid ketamine:

I stumbled on a friend who gave me a whole 6 pack of licks [vials of ketamine], and I happened to have a needle because I was doing dope [heroin] at the time. And it was like, ‘Whoa, I want to come down from this speedy, speedy, speedy X [ecstasy].’ I only used one bottles worth. It took me about a whole day to get through. I really didn’t go to sleep that much. It just sat around. But, it was a great candy flip. It’s better than that flipping X with acid [LSD].

Additionally, the youth mentioned a “candy flip,” which refers to purposefully co-using ecstasy and LSD for a unique drug high. In the previous passage, the youth suggests that he preferred co-using ketamine and ecstasy over mixing LSD and ecstasy.

In contrast, an 18-year-old, Latino male and Ketamine Initiate describes a more planned sequencing of ketamine use and ecstasy at a rave in New York. As he indicates, he did two shots of ketamine, and later consumed ecstasy at the same event, but that the whole experience was not very memorable:

The last time I shot K [ketamine] I was at a rave in Queens. One of my friends [female, 15 years old] showed up with a lick [vial of liquid ketamine] and some needles. We had nothing to do so we stood in the corner of the place and I did two small shots in my vein. I’m constantly afraid that I’m going to do too much of a shot. I just like going halfway. She did one shot. I did mine [injected self], she did hers, and then I did mine. Afterwards, we took ecstasy. I don’t remember much about the whole experience—except that I probably did some dancing. It was all kind of a blur. The next day I was kind of out of it.

This narrative raises an important point about protective and risk practices. The young man indicated a concern for overdosing so he purposefully injected two smaller shots of ketamine rather than one larger shot. However, he and his friend may have shared the same vial of ketamine while attempting to take turns and inject smaller shots. Hence, one attempt at reducing risk, such as injecting small amounts of ketamine, may have inadvertently lead to another high-risk practice, such as sharing a vial of ketamine.

Hallucinogens—LSD and Mushrooms

One-tenth of the sample consumed either LSD or mushrooms at ketamine injection initiation. Additionally, youth infrequently consumed LSD at the most recent injection of ketamine or on the day prior to being interviewed.

Here, a 19-year-old white male and Other Initiate describes how he initiated ketamine injection initiation after eating mushrooms at an indoor rave in Seattle. Of note is the fact that he consumed three different drug forms—stalks, powder, and liquid—and administered each differently—orally, intranasally, and intramuscularly, respectively. Also, he suggests that the mushrooms buffered the effects of the ketamine:

The very first time I did ketamine I snorted it [powder] but didn't feel anything. I had also eaten some mushrooms earlier. And then, some other guy was like, "Yo—you're supposed to do it in your muscle." So I muscled two shots [liquid] even though I didn't really feel comfortable doing it that way. I still didn't feel anything. It might've been because of the mushrooms. The lights were kind of cool, and then I stopped hallucinating and sat down for like 15 minutes. I just stared at the ground and was trying to feel the other drug [ketamine]. And then I just felt really limber and soft. It was kind of weird because the drugs [ketamine and mushrooms], like, counteracted, but I was willing to do it again.

Similarly, a 23-year-old biracial male and Other Initiate also describes how multiple drug forms and modes of administration characterized his most recent injection of ketamine at an outdoor rave in West Virginia. Unlike the previous youth, however, he ingested the hallucinogen after injecting ketamine, and experienced a more disturbing effect. Also of note is the multiple drugs sold among the three youths described below:

I was selling crystal meth, my friend was selling K, and his girl was selling acid. I didn't have to pay for the K—we just hit off each other. My friend injected me in my muscle [with liquid ketamine]. I still didn't know how to do it—I didn't want to accidentally OD [overdose] or something. About an hour later, I sniffed more K, took some acid, and just started dancing around and seeing shapes and stuff. I was dazed and blabbering. I was talking but I wasn't making any sense and then I felt sick.

It is noteworthy that both polydrug using episodes described in these two narratives occurred at raves—large, communal gatherings focused on music and dancing. Hence, the social, often ritualized aspects of polydrug use should be viewed as an important component of how and when particular drug using practices occur, whether it be smoking, sniffing, or injecting ketamine.

Discussion

The broader patterns of polydrug use among this sample can be partially understood by distinguishing between youth who viewed ketamine as a drug of choice and those who largely experimented with ketamine. One-quarter of the sample injected ketamine 20 or more times in the past year, and could be described as regular or frequent ketamine injectors. Among these youth, ketamine was their drug of choice, and repeatedly using ketamine revealed that polydrug use—either co-use or simultaneous drug use—often detracted from the ketamine experience. Three-quarters of the sample—infrequent to occasional ketamine injectors whose drug of choice might be marijuana, alcohol, heroin, cocaine, or speed—were more likely to incorporate ketamine into polydrug using events on an experimental basis. As indicated earlier, youth who used ketamine singly were more likely to report a positive experience compared to youth who combined ketamine during a polydrug using event. However, we also reported that using ketamine singly may also present high-risk situations linked to deleterious outcomes.

While individual accounts were used to describe polydrug use, the social or communal quality of drug use is an important theme that characterized many of the accounts in this article. In fact, approximately nine-tenths of both ketamine injection initiations and recent injections occurred among groups of injectors. Often, each person in the group contributed something to the drug using event: ketamine, other drugs, syringes, money, knowledge, or space to use drugs or hang out afterwards. In most cases, a polydrug using event would not have occurred if it depended upon the resources of one individual alone. Hence, while some polydrug using events may have originated out of individual desires to create certain drug experiences, the actual events frequently depended upon the marshalling of resources and knowledge within groups of youth.

Previously, we reported that ketamine injection events typically occurred outside of party, club, or rave settings (Lankenau and Clatts, 2002). Similarly, findings from this larger sample indicate that ketamine injection initiation, recent ketamine injection, and recent sniffing events most commonly occurred in apartments and houses, and less typically in party, club, or rave settings. Significantly, polydrug use commonly characterized those ketamine using events happening at parties, clubs, or raves. Hence, these findings suggest that ketamine is used as a recreational drug apart from the club/rave environs—regardless of mode of administration—among some groups of users.

Conclusion

This article described polydrug using practices among a small sample of young ketamine injectors recruited from street and park settings in New York City. These findings demonstrate that young people typically used ketamine in the context of a polydrug using event. In particular, we indicated that polydrug using events were far from uniform. Rather, in the context of ketamine use, polydrug using events were often quite variable regarding the sequencing of drug use, the drug combinations consumed, the forms of the drug utilized, and the modes of administering the drug combinations.

Treatment professionals who counsel young drug users should listen for accounts and descriptions of polydrug use to better understand the histories, contexts, and risks associated with illicit drug use. As these findings suggest, drugs such as ketamine are frequently consumed in the context of a polydrug using event in a variety of settings. Specific drug combinations, such as ketamine and speed, may produce unique experiences that ultimately develop into a polydrug combination of choice. Additionally, variables relevant to polydrug using practices, such as drug sequencing or drug form, may impact upon trajectories into risk and drug dependence, and signal the need for different treatment modalities.

Limited research has been conducted on the effects and risks associated with different drug combinations. Rather, drug users must often rely on various “folk pharmacologies” (Southgate and Hopwood, 2001) developed through individual experimentation with various drug combinations to minimize risks. Given the limited availability of detailed information on ketamine use practices, future research should be directed towards developing a more comprehensive description of the risks associated with combining ketamine with other drugs as well as protective practices employed to mitigate harm. In particular, research should be aimed at understanding ketamine and polydrug use in the context of drug overdose, transmission of bloodborne pathogens, short- and long-term effects on cognitive functioning, and drug dependence.

Glossary

Simultaneous drug use

Mixing two or more drugs together and administering them at the same time. Often, simultaneous drug use is often accomplished by consuming the drugs via a single mode of administration, such as injection or sniffing.

Co-use

The sequential administration of two or more drugs during the course of a drug using event, a particular day, or longer periods. Co-using two or more drugs is frequently accomplished by consuming the drugs via multiple modes of administration, such as injection, sniffing, smoking, or drinking.

Candy flip

Purposefully combining ecstasy and LSD during a drug using event or over the course of a day to produce a unique drug high.

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Biographies

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Table 1

Selected sample demographics

	Total (n = 40)	f
Gender	%	
Male	73	29
Female	28	11
Race/ethnicity	%	
Caucasian/White	65	26
Biracial	18	7
Latino/Hispanic	13	5
Asian-American	3	1
Native American	3	1
Sexual identity	%	
Straight/heterosexual	95	38
Bisexual	5	2
Education	%	
H.S. grad/GED+	68	27
Homeless	%	
At interview	38	15
Ever	73	29
Work status	%	
Panhandle	35	14
Sell drugs	25	10
Informal economy	23	9
Formal economy	13	5
Unemployed	8	3
Age at interview		
Median	21	
Range	18–25	
Recruitment venue	%	
Street	68	27
Park	33	13
First drug injected	%	
Ketamine	58	23
Other	43	17

Table 2

Polydrug use/previous day use

Drug	Ketamine initiation (n = 40)	Recent injection (n = 35)	Recent sniff (n = 34)	Previous day use (n = 40)
Marijuana	28%	20%	18%	38%
Alcohol	20%	20%	29%	30%
LSD/Mushrooms	10%	6%	0%	3%
Speed	8%	8%	3%	0%
PCP	8%	9%	9%	5%
Ecstasy	8%	3%	3%	3%
Heroin	5%	6%	9%	25%
Cocaine/crack	0%	0%	6%	10%
GHB	0%	0%	6%	0%
Ketamine	na	na	na	13%
None	38%	40%	38%	23%