Fentanyl, Heroin, and ethamphetamine-Based Counterfeit Pills Sold at Tourist-

Fentanyl, Heroin, and ethamphetamine-Based Counterfeit Pills Sold at Tourist-Oriented Pharmacies in exico: An Ethnographic and Drug Checking Study

Abstract

Background

Introdu tion

Our ethnographic team has conducted longitudinal research focused on illicit drug markets in Northern Mexico since 2018[1–4]. In 2021-2022, study participants—especially those who were US citizens that frequently visited in or stayed in Mexico to consume illicit drugs—began describing new, unusually potent medicatX3

were recorded, transcribed, added to the existing corpus of data, and coded. The final ethnographic database, including baseline and study-specific data, consists of more than 100 transcribed recordings, 500+ pages of fieldnotes, 600+ photographs, and dozens of videos documenting practices in natural environments unfolding in real time. Data from prior to 2022 (2019-2021) were drawn from the pre-existing corpus of ethnographic information, whereas novel ethnographic data were collected in 2022 for this study. All qualitative data were entered into NVivo and analyzed for emergent themes. Of particular relevance for this analysis, all encounters occurring in pharmacies were analyzed separately to track the evolving use of pharmacies by P UD over time (2019 to 2022). Narratives from pharmacy staff and key informants with detailed relevant knowledge regarding medication quality, safety, contents, and origin, were also specifically assessed.

Drug Ch cking M thods

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contained fentanyl, and n=3 (11.1%) "oxycodone" samples that contained heroin (Figure 2). None of the pills sold as Xanax were found to be counterfeit. One sample sold as "Vicodin" was shown to contain only lactose and tramadol on FTIR spectroscopy (note: authentic Vicodin contains hydrocodone, not oxycodone. However, when pharmacy employees offered other types of prescription opioids in response to "oxycodone," they were acquired and processed, given that many tourists may not recognize the difference). A wide variety of presumptively authentic controlled substances (based on fentanyl and methamphetamine negative status with immunoassay strips, and FTIR confirmation) were available (see Figure 3). A variety of phenotypes of counterfeit medications were also observed (Figure 3). See the supplement for more details on how final drug checking designations were determined.

Despite intensive fieldwork employed in concert with drug checking technologies, the ethnographic team determined that it was not possible to distinguish counterfeit medications from their authentic counterparts based on appearance, as identically-appearing authentic and counterfeit versions were often sold in close geographic proximity. For instance, pills appearing to be blue "M30" oxycodone tablets were found in authentic, heroin-, and fentanyl-based formulations. Geographic context was also helpful—with substances sold in specific microneighborhoods found to be more likely to be counterfeit—but provided no guarantee of authenticity. Only the use of several concurrent drug checking technologies provide a reasonable measure of confidence in medication composition. Of note, heroin-based counterfeits were not initially detected by immunoassay strip testing and were only identified by FTIR spectroscopy—a level of drug checking sophistication currently unavailable in many settings where illicit drugs are purchased and consumed.

Ethnographic R sults

Fieldn te excerpt fr m 2019] I'm spending t e day walking ar und t e city wit Linda (pseud nym used ere and t r ug ut t e text) a gringa w 's been living in Mexic f r a few years after being trafficked, escaping er capt rs, and w n w w rks mainly as a self-empl yed sex w rker. In er early 30s, s e as been dependent n injecti n pi ids f r nearly a decade. S e uses ab ut 5, 50-pes $2.5 USD] bags f C ina W ite er in (w ic s e believes c ntain fentanyl) per day and dabbles wit many t er substances. S e is excited t s w me a dizzying array f drug c nsumpti n spaces in t e city. One f t e st ps is a s mew at f rmal l king brick-and-m rtar p armacy. "T ere's t is crazy p armacy rig t ver ere, w ere y u can g in t ere and buy er in and c caine and t e fucking w ite-c at p armacist sells w atever it is t y u! And t en y u can even take it in t e back and use it back t ere. I ave $3, t at's en ug , I can s w y u". We g int t is p armacy, w ic I ad never taken a sec nd l k at, despite passing by it frequently. S e greets t e p armacist, w is wearing a w ite c at, and is visibly c vered in tatt s n all exp sed parts f is ands, arms, and neck. T ey speak c mf rtably in Englis , and it's clear t ey kn w eac t er. He barely n tices me, w ic I imagine is because Linda is a c arismatic f rce f nature, w frequently can be seen pulling male clients ar und in er rbit as s e traverses t e urban landscape. S e ands ver 50 pes s and asks f r a Valium. He gives er a single pill and 20 pes s in c ange, and we g int t e back r m s s e can sn rt it. T e r m is basically a large cl set, and it as a bunc f ride s are sc ters t at l k like t ey've been st len fr m t e US (because t ey are fr m c mpanies t at d n't perate in Mexic), as well as s me bicycles. After s e crus es up t e pill wit a plastic card, and sn rts t e w ite p wder, s e tells me t at wit t e remaining twenty pes s s e can s w me a s ting gallery rig t acr ss t e street; if we can find five m re pes s we can get a 25 pes bag f met . We leave t e p armacy, cr ss t e street, and duck int an alleyway...

The ethnographic passage above—from the pre-existing ethnographic corpus—details a pharmacy-based drug acquisition encounter occurring in 2019. Single tablets of controlled substances—especially benzodiazepines—could be routinely obtained at affordable prices from specific pharmacies known to PWUD. Most were proximate to drug- and sex-tourism

microneighborhoods catering to US tourists and heroin- and methamphetamine-dependent Me ican nationals. On rare occasions, the ethnographic team also observed methamphetamine and heroin purchased directly from white coat-clad pharmacy employees. More central to the lives of most PWUD was the acquisition of individual sterile syringes (a legal practice); PWUD often shared details with one another from a complicated ta onomy of which pharmacies would sell syringes to tourists, which ones were open to individuals who appear to have a homeless habitus, and if a cover story was required e.g. "I need syringes for my mom's insulin". O ycontin was not routinely pursued at pharmacies by most ethnographic study participants, and most opioid users used 50-peso (2.5 USD) bags of powder heroin (known as China White) as their main opioid product. On several occasions, study participants bought large bottles of over-the-counter tramadol capsules to facilitate "kicking" their heroin habit.

In 2021-2022, ethnographic participants began describing new, unusually potent controlled substance tablets sold from pharmacies that cater to US tourists:

interview rec rded in 2022]"I've been buying xy f r years ere, it used t be t e OG riginal] xys nly. T ey were pretty expensive, s I'd nly buy em nce in a w ile. But ab ut a year ag , all f t e sudden, it was just like 'b m' and we ad t ese really str ng Oxys f r nly 20 d llars per pill. S I started d ing a bunc f em, like 7 a day if I ad t e m ney. But t ey felt different, t e xys felt like er in t me, but t ese new nes, are like fentanilUOL.f ?W3W!U!L.nlAUzL

t t e back f t e st re in t is really awkward way and pulled t e little baggie wit tw pills ut f is p cket and anded it t me and I left. It felt like way m re precauti ns were taken t an t er enc unters, w ic I attributed t it being in a part f t wn wit m re f rmal t urism in t e area, s t ey t k m re precauti ns t an p armacies in t e part f t wn w ere pe ple g f r sex t urism, w ere t ings were a bit m re ut in t e pen.

Pharmacy employees selling counterfeit tablets occasionally expressed concern about potency and provided harm reduction guidance, classically "only take half and see how you feel" (see third ethnographic passage above). Additionally, on several occasions, pharmacy employees selling exclusively authentic oxycodone products would counsel caution purchasing products elsewhere, implying risk of overdose or adverse drug reactions:

[field note from 2022] We head into this small pharmacy which caught our eye because it says "English Spoken" in big letters on the front, which at this point was starting to seem like code for "we have recreational drugs". The woman behind the counter didn't speak Native English, but she spoke pretty good casual English. We ask "do you have Oxycodone?" and she says "Yes", very matter of fact, and then starts cracking jokes about how much better her supply is than the neighboring pharmacies. She says

Dis ussion

Leveraging recent improvements in point-of-use drug checking technologies, we provide the first characterization—to our knowledge—of the contents of medications sold at pharmacies in tourist-serving areas of Northern Mexico, in single pill form, to English-speaking tourists without a prescription. e find a high rate of counterfeit products, with widespread fentanyl and methamphetamine prevalence in numerous sites.

The availability of fentanyl, methamphetamine, and heroin-based counterfeit medications in Northern Mexican pharmacies that are oriented towards serving tourists represents a distinct public health threat. These medications have been implicated in large increases in overdose risk in the United States, especially among subpopulations of individuals that are willing to experiment with prescription pills but not more stigmatized formulations like powder heroin[6–10]. Although IMF-based pills represent a very high-risk category of illicit drug product, drug consumers may be more trusting of controlled substances purchased directly from pharmacies. Critically, it is not possible to distinguish counterfeit medications based on appearance or geography, as identically-appearing authentic and counterfeit versions are often sold in close geographic proximity. Harm reduction logic would dictate that a person consuming purported controlled substances purchased at pharmacies in these micro-neighborhoods should test each pill on each occasion that drugs are consumed, to ensure IMF and methamphetamine contamination has not occurred.

Ethnographic data suggest that the phenomenon of counterfeit controlled substances in pharmacies of northern Mexican cities is likely recent. Nevertheless, it occurs in the context of a long history of drug and medical tourism to Mexico by US residents and citizens[22–26]. There is a well-established practice of US tourists traveling to Mexico to purchase medications at a far lower cost than those available in the US, and often with no prescription, for medications that require a formal prescription and potentially expensive doctor's visit in the US. This demand in large part reflects the extremely expensive,

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knowledge of the Mexican legal landscape, it may not be immediately apparent that the sale of any controlled substance without a special prescription constitutes an illegal act.

Additionally, it is important to note that the rate of opioid prescription in the US has fallen drastically over the past decade, by nearly 50% in terms of morphine milligram equivalent (MME), between 2010

are often sold in close geographic proximity and are visually and otherwise indistinguishable from one another. Nevertheless, US tourists may be more trusting of controlled substances purchased directly from pharmacies. Due to Mexico's limited opioid overdose surveillance infrastructure, the current death rate from these substances remains unknown.

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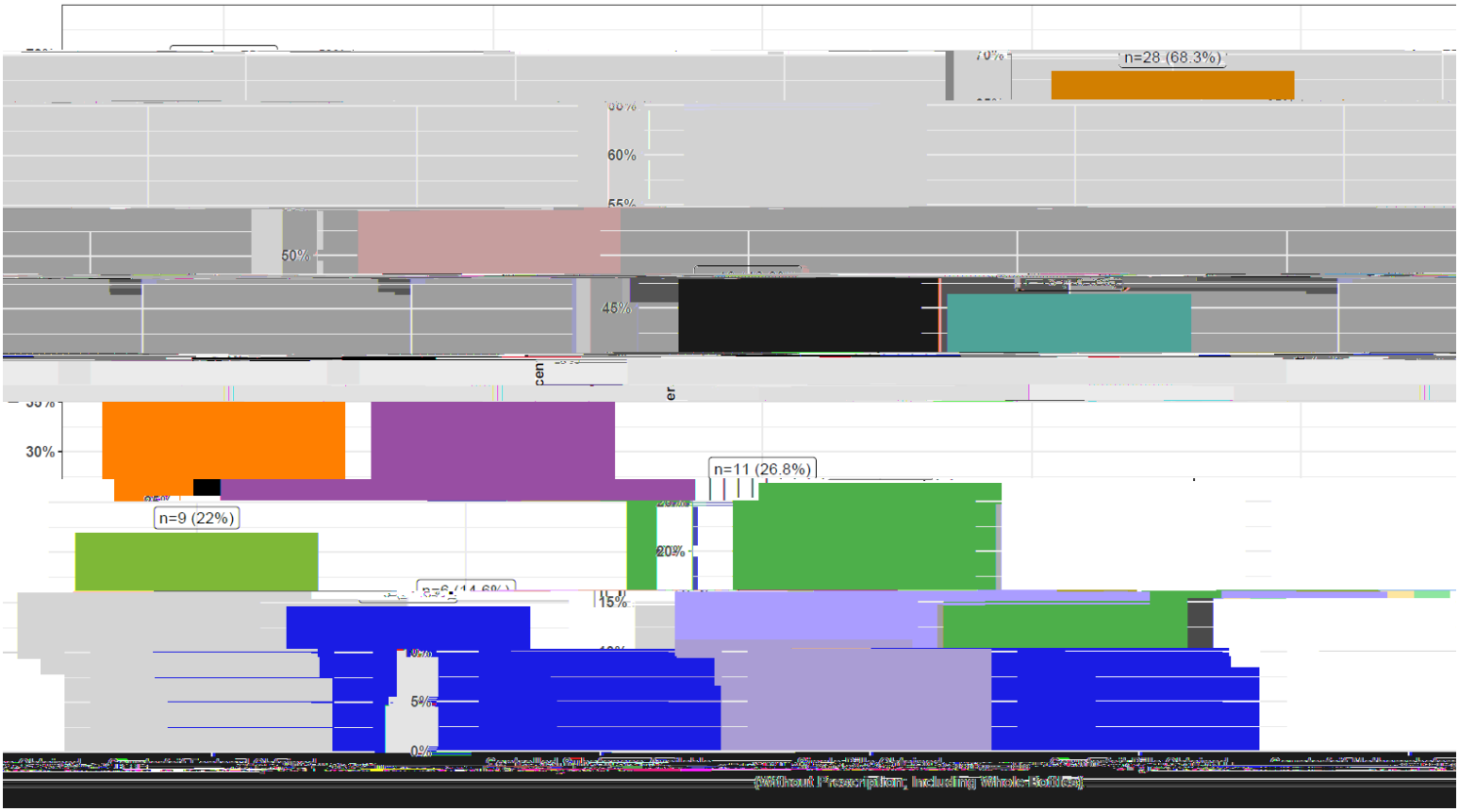

Figure 1. Controlled and Counterfeit Substance Availability at n=40 Pharmacies in Northern Mexico
Pharmacy-level statistics are shown, depicting the availability of controlled substances, as well as counterfeit status as determined with immunoassay and FTIR spectroscopy. Data from n=40 pharmacies are included.

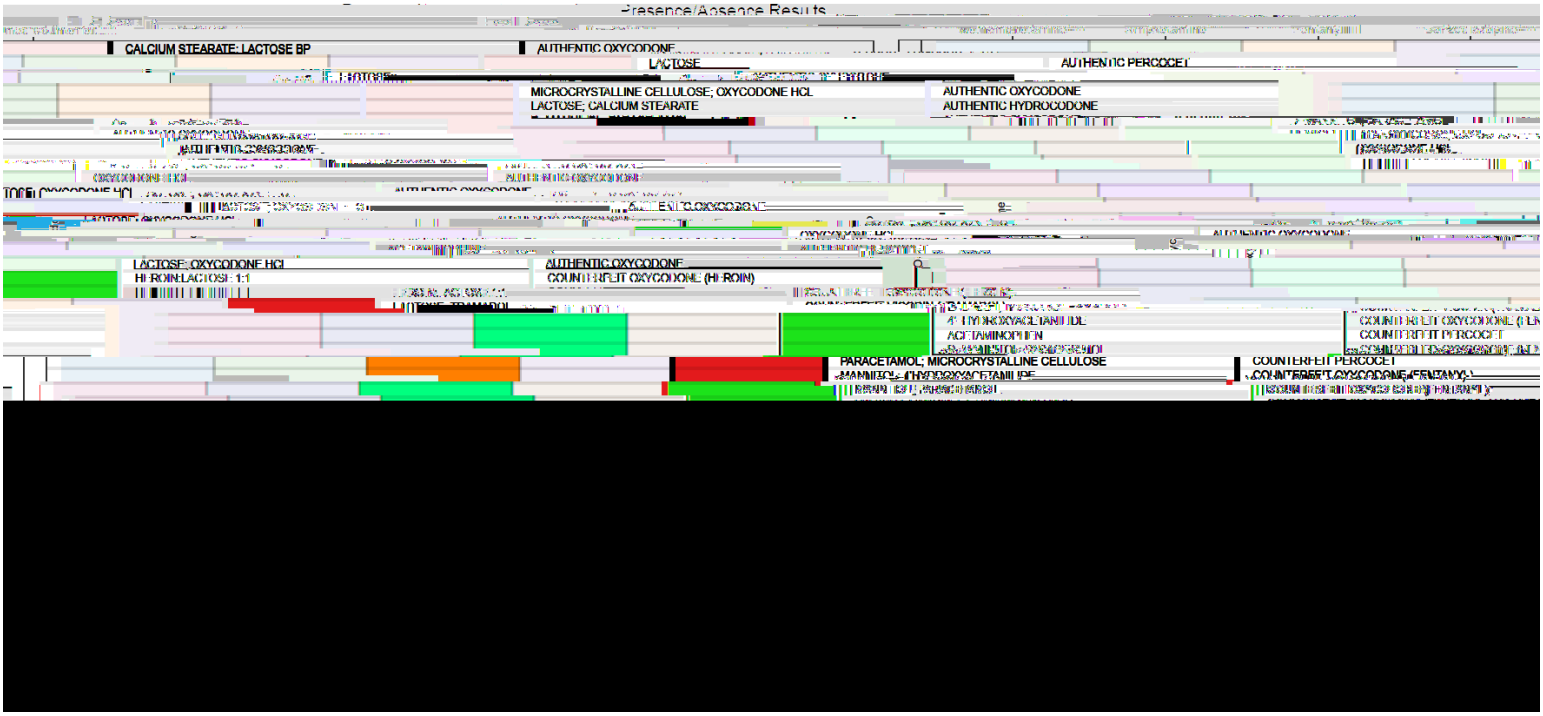

Figure 2. Drug Checking Results From n=45 Pill Samples Obtained in Northern Mexico

Pill-level data are shown, with one row per sample analyzed. The labs on the far left show the prompt used to obtain each pill, i.e. what the sample was sold as. Binary, presence/absence results are shown for four drug categories using shaded vs unshaded boxes. FTIR results are shown in free text, with up to 3 results separated by semi-colons. The 'final read' as determined by the investigators is shown in free text. Not all final reads are 100% definitive, rather it represents the most likely result as determined by all forms of drug checking and ethnographic data (see the supplement for a more elaborate description).

Figure 3. Examples of Known Counterfeit and Presumed Authentic Samples
Photos (front and back) are shown of example pills, by what the sample was sold as, as well as presumed authentic or counterfeit status.