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# The social context of hormone and silicone injection among Puerto Rican transwomen

**Mark B. Padilla**[a], **Sheilla Rodríguez-Madera**[b], **Alixida G. Ramos Pibernus**[b], **Nelson Varas-Díaz**[c], **Torsten B. Neilands**[d]

[a]Department of Global and Sociocultural Studies, School of International and Public Affairs, Florida International University, Miami, USA

[b]Department of Social Sciences, School of Public Health, University of Puerto Rico, San Juan, USA

[c]Department of Global and Sociocultural Studies, Florida International University, Miami, USA

[d]Center for AIDS Prevention Studies, Department of Medicine, University of California, San Francisco, USA

## Abstract

This paper draws on ethnographic, qualitative and survey data with transwomen in Puerto Rico to examine the social and political-economic context of lay injection with hormone and silicone – common practices within this community. We describe specific practices of hormone and silicone injection, the actors that govern them, the market for the sale and distribution of syringes and the networks of lay specialists who provide services to a population that is neglected by and largely excluded from biomedical settings. Our data derive from ethnographic observations, sociodemographic questionnaires, surveys and semi-structured interviews conducted with a diverse group of transwomen in metropolitan San Juan, Puerto Rico. Our analysis focuses on four overlapping social domains or processes that shape the practices of lay silicone and hormone injection among transwomen: (1) the circulation of gender transitioning technologies within local and global markets; (2) the tension between the social exclusion of transwomen and their resilient sub-cultural responses; (3) the cultural meanings that shape transwomen's attitudes about injection; and (4) the perceived consequences of injection. We conclude with a discussion of the kinds of intervention and policy changes that would respond to the factors that most endanger transwomen's health.

### Keywords

Social exclusion; transgender; transwomen; Puerto Rico; silicone injection

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CONTACT Mark B. Padilla: marpadi@fiu.edu.

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## Introduction

Practices of silicone and hormone injection for the purpose of bodily modification and gender transitioning among transgender and transsexual women (hereafter, *transwomen*) are common on the island of Puerto Rico. Although lay practices of hormone and silicone injection have been remarked upon in the public health and social science literature (Crosby and Pitts 2007; Kulick 1998; Prieur 1998; Wiessing et al. 1999), these phenomena have rarely been the primary object of study. Public health research among transwomen has focused on correlates of HIV infection, drug use, mental health conditions, chronic diseases and other health outcomes, rather than the cultural meanings and social practices of specific gender transitioning procedures, which may influence the aforementioned outcomes (Ash and Mackereth 2013; Clements-Nolle, Marx, and Katz 2006; Herbst et al. 2008; Kellogg et al. 2001; Nemoto et al. 2004). For example, while the common practices of lay or informal silicone and hormone injection as a means of gender transitioning may have numerous short- and long-term health consequences, little scientific knowledge exists regarding the cultural and behavioural practices of unsupervised injection among transwomen. Ethnographic research is essential to contextualise data on health outcomes among transwomen from their own diverse positions and perspectives, and to develop health policies and interventions grounded in the cultural knowledge and bodily practices of gender transitioning.

This mixed method ethnographic study aims to situate practices of hormone and silicone injection within Puerto Rican transwomen’s cultural and political-economic context, as a point of entry into discussions of possible policies, programmes or interventions. We also discuss the applicability of our results to the recent analysis of risk behaviour among transgender persons, suggesting that the systematic lack of gender affirmation may contribute to the rather extreme health vulnerabilities that transwomen assume when they engage in street-based practices of hormone and silicone injection (Sevelius 2013). Drawing on ethnographic research, qualitative interviews and quantitative surveys with transwomen in San Juan, Puerto Rico, we examine how four social processes shape the behaviours, practices and meanings of hormone and silicone injection in this setting: (1) the circulation of gender transitioning technologies within local and global markets; (2) the tension between the social exclusion of transwomen and their resilient sub-cultural responses; (3) the cultural meanings that shape transwomen’s attitudes about injection; and (4) the perceived consequences of injection, which are often expressed through ‘injection stories’ that circulate in transwomen’s social networks. We conclude with a discussion of the implications of our findings for policy and intervention.

### The significance of research on hormone and silicone injection among transwomen

Recent research underlines the urgency of studying and developing policies and interventions to support the health and wellbeing of transgender/transsexual persons (Institute of Medicine 2011). Non-conformity to hegemonic (cisgender) ideals of masculinity and femininity is often met with stigma, discrimination and violence, the epidemiological consequences of which can be observed in the high rates of exposure to violence among trans communities documented in the public health literature (Nemoto, Bodeker, and Iwamoto 2011; Nemoto et al. 2004; Rodríguez-Madera et al. 2016).

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Epidemiological studies continue to show an extremely high impact of HIV on transwomen (Clark et al. 2016; Wolitsky et al. 2006). Although no systematic national or local surveillance data are currently available on HIV among transwomen in the USA, systematic reviews of surveillance data show disproportionately high rates of HIV infection (Clark et al. 2016; Herbst et al. 2008; Rodríguez Madera and Toro-Alfonso 2003). Herbst et al. (2008) developed a systematic review of 29 peer reviewed studies published between 1990 and 2003 and found an average HIV prevalence of 27.7% among transwomen in the USA and Puerto Rico. More recently, Clark and colleagues (2016) examined HIV surveillance data of transgender women from jurisdictions in 45 states and the District of Columbia between 2009 and 2014, and found that 29.3% of the newly diagnosed cases of HIV were Latina transgender women, and 50.8% were African American.

Few studies of which we are aware have examined injection practices that may also increase risk for HIV or other blood-borne infectious diseases, such as injectable hormones and silicone, which are often used by transwomen to feminise their bodies as a part of gender transitioning (Aguayo-Romero et al. 2015; Crosby and Pitts 2007; Wilson et al. 2014). The paucity of public health research on injection practices is worrisome because some transwomen may share needles, or informal injection specialists may not implement basic clinical procedures (e.g. infection control), patient education (e.g. potential short- and long-term effects) and medical follow-up to prevent complications (e.g. necrosis, embolism and hormone imbalances). Further, there have been few social scientifc studies that have sought to contextualise injection practices within a broader context as a means of developing innovative health policies and interventions (Aguayo-Romero et al. 2015).

Injection practices among transwomen had not been studied in Puerto Rico prior to our project. There is no separate epidemiological category for transgender/transsexual individuals in Puerto Rico, and thus it is quite possible that a number of transwomen are misclassified in epidemiological categories as 'men'. The top three modes of HIV transmission in Puerto Rico are men who have sex with men (45%), heterosexual transmission (31%) and injection drug use (IDU) (18%) (Puerto Rico Department of Health 2016). In an epidemic in which both lesbian, gay, bisexual and transgender communities and injection drug users shoulder the epidemiological burden of HIV infection, it is concerning that lay or informal gender transitioning practices such as silicone and hormone injection have been overlooked by HIV prevention research and health policy development in Puerto Rico.

Research that focuses on specific gender transitioning practices, such as lay injection practices, is significant in that it calls attention to the ways the social exclusion of transgender persons is linked to the behavioural practices of individuals and groups. Social exclusion is a mechanism through which specific groups within a society are denied equal access to a variety of resources for social support and survival, such as a health care system that provides no culturally appropriate clinical services for trans patients (Mikkonen and Raphael 2010). Indeed, research has documented that many transwomen globally report experiencing discrimination from their health care providers and feeling invisible in health care institutions. This is similar to the participants in this study, who described having to obtain non-prescription hormones and silicone injections on the street because physicians

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were not trained in transgender care, nor were they sensitive to the issues involved in providing gender-affirming care to this population.

In a mixed method study of transwomen and lay transitioning practices in Bogota, Colombia, Aguayo-Romero and colleagues conclude that '[b]ody modification procedures occurred primarily outside the health care system, due to limited access to or awareness of medical care, societal stigma, social norms within the transgender community, and personal decision-making' (Aguayo-Romero et al. 2015, 103). Our conclusions echo these, but we extend the argument by suggesting that the lay body modification practices we describe are actually enabled by the generalised neglect of transgender bodies in the formal medical establishment and clinical practice. In short, the existence of the injection practices described in this paper cannot be fully understood without consideration of the neglect of transgender persons by the medical establishment and clinical training programmes, which have not responded to the urgent need for quality transgender care in Puerto Rico.

## Methods

We conducted a mixed methods study to describe the social context of non-prescription injection and other illicit body modification procedures, and to examine their connections to health risks, among adult (18 and older) transwomen in Puerto Rico's San Juan metropolitan area. As part of a larger study of transwomen's health, we report on data from our ethnographic observations and in-depth interviews ($N = 39$) that describe ideologies and practices of hormone and silicone injection. To provide further estimates of the distribution of these practices and other population characteristics among transwomen in Puerto Rico, we also include limited basic descriptive statistics on hormone and silicone injection from our quantitative survey ($N = 59$). Each of the samples (qualitative interviews and quantitative surveys) was recruited independently; however, due to the small nature of the sample and the anonymity of our recruitment approach, we cannot determine whether and to what extent participants engaged in both data collection methods. We therefore consider them independent samples.

All formal interviews were conducted at one of the team's two field offices, located in Santurce, a working-class neighbourhood of San Juan, and at the University of Puerto Rico, Río Piedras campus. The Santurce office is located in the centre of the main trans social scene and near one of the primary transgender strolls for commercial sex work in San Juan. Qualitative interviews took on average 1.5 h, and surveys 45 min. Participants in both kinds of interviews received US$50 incentives. Below we summarise the procedures for each data collection method.

### Ethnographic observations

The first phase of our project involved nine months of participant observation with transwomen aimed at understanding the broader sociocultural and political-economic context of gender transitioning procedures and practices. Ethnographic procedures involve a continuous cycle involving participant observation sessions, the development of provisional hypotheses or interpretations based on those observations, the writing of ethnographic field notes and analytic memos and recurring visits to previous sites for continued participant

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observation and analytic refinement. All co-authors participated in ethnographic observations, permitting us to discuss and triangulate our field notes as a team.

Two local transwomen knowledgeable about the community were hired as consultants to accompany us on some of our ethnographic outings. Much of our ethnographic observations focused on areas of night-time socialising, such as the sidewalks around gay bars and clubs, particularly where drag shows are held; street-based sex work areas, often located in isolated industrial or less trafficked blocks adjacent to commercial zones; and sites where hormone and silicone injection are negotiated or conducted, such as the parked vehicles or street areas where informal injection specialists (or *inyeccionistas* in Puerto Rico) meet transwomen clients.

## Semi-structured interviews

All participants in the semi-structured interviews (SSI) self-identified as 'transgender' or 'transsexual' (*transgénero* or *transexual* in Puerto Rican Spanish), or one of the local terms used to describe an individual with cross-gender dress and demeanour. Most of our SSI participants had engaged in some form of feminising body modification, ranging from liquid silicone injection obtained through the informal market, on the one hand, to sex reassignment surgery, on the other. Nevertheless, sex reassignment surgery (involving the removal or inversion of the penis and vaginoplasty) was quite rare in our sample, partly due to the fact that it is not available in Puerto Rico.

Based on initial ethnographic observations, we developed a SSI guide that included open-ended questions on diverse topics such as: experiences of body modification (e.g. motives, practices and knowledge of hormones and silicone use and social activities surrounding them); the social contexts and environments of trans-related spaces (e.g. descriptions of geographies, site-specific activities and migratory routes or mobility patterns); sexual risk practices; drug use histories; commercial sex work histories; narratives of gender transitioning procedures and technologies; and exploration of social and structural factors that may contribute to sexual risk-taking and injection practices.

## Sociodemographic characteristics of sample

A demographic questionnaire was distributed to each SSI participant, and included questions regarding the participant's economic status, historical and current gender identification, area of residence, education level and sexual orientation, among other demographic characteristics.

Sociodemographic data for the participants are shown in Tables 1 and 2. Participants had an average age of 29. One-third lived alone, and the rest with either family or friends. Most resided in the San Juan metropolitan area, including the towns of Bayamón and Carolina. All participants showed high levels of mobility throughout the island. Three participants reported having children, and several more discussed having intimate relationships with women, including marriage. Many participants had completed high school, and one-third had some post-secondary education. The average monthly income from all sources was just over US$1000, and ranged from US$20 to US$5000. Median annual income for Puerto

Rican households in general was reported as US$19,518 by the US Census Bureau for the period of 2010–2012, which is approximately US$1627 monthly (US Census Bureau 2014).

### Surveys

Our survey was conducted using face-to-face interviews in which interviewers used iPads. Inclusion criteria for this phase were the same as for the SSI. Participants were recruited using Respondent-Driven Sampling (RDS) techniques (Heckathorn 1997). Our use of RDS was focused on evaluating the feasibility of using this approach in the population, although our ultimate sample ($N = 59$) was too small to permit formal statistical testing. We therefore focus in this paper on select descriptive statistics to provide some overall trends. The survey included a broad range of health and social measures, among which we have selected those related to: history of hormone injection; history of silicone injection; category of person(s) who injected each substance; needle sharing frequency; other injected substances; and IV drug use history. Table 3 shows the frequencies of each variable on injection practices in our sample.

### Analysis

SSI were audio-recorded and transcribed in Spanish. As all team members are bilingual in Spanish–English, all data were coded and analysed in Spanish. Segments of interviews have been translated into English by the authors in the preparation of this paper. All textual data (field notes and interview transcripts) were formally coded using NVIVO qualitative analysis software. Coding occurred in two stages. First, *in vivo* coding was used to emphasise the language and concepts of participants regarding themes of central interest to our project, such as cultural beliefs about hormone and silicone injection. This stage included: (1) open coding using brief restatements of emerging themes in a sub-set of interviews ($N$=8); (2) writing analytic memos to describe behavioural and thematic patterns in the data; and (3) developing a code hierarchy including main themes and sub-themes to focus our analyses. This process allowed us to create a formal codebook of well-defined central themes and sub-themes.

The application of the codebook marked the beginning of Stage 2 focused coding. Two procedures ensured consistency in the assignment of codes in NVIVO across the four coders and helped us to clarify ambiguities in the codebook. First, all transcripts were double-coded, with two coders working independently on each transcript, and subsequently discussing their coding decisions in meetings for this purpose. If differences were encountered they were discussed and consensus reached between coders. Consensus was reached in all cases. Second, the co-investigators were involved in coding as well as spot-checking each coder’s work throughout the coding process, ensuring conceptual linkage to study aims and analytic continuity.

Once textual data were fully coded in NVIVO, we examined expressions of codes across the sample, described patterns and determined marginal or exceptional cases. This kind of ‘vertical’ analysis facilitated the examination of code-specific responses across the entire sample by decontextualising the data from the larger narrative. We analysed variations in the data by exploring how specific codes were related to the context of meaning and experience



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for particular individuals. This 'horizontal' analysis allowed us to look systematically at how factors of interest were linked to other aspects of an individual's narrative or sociodemographics.

The survey data included here were analysed in SPSS for descriptive statistics. We obtained basic frequencies of each of the selected variables across the sample, and calculated percentages of each within the full sample of 59.

All the participant names used in this paper are pseudonyms.

## Findings

### The global market for hormones and silicone among transwomen in Puerto Rico

The following is an excerpt from an ethnographic field note taken by the first author in 2012, following an outing to a trans-friendly club with Jessica, a transwoman in her forties who accompanied our team regularly during our fieldwork, and helps to situate injection practices among our participants within both local and global markets.

> Jessica explained to me that she has injected herself and others with silicone, and has studied *estética* (aesthetics, a specialised form of cosmetology training), which allowed her to accurately advise her clients on things such as balance, quantity of silicone to inject and the best injection sites. When she has obtained silicone in the past, it has been Brazilian silicone that is transported to Ecuador, and then brought via suitcase trade to Puerto Rico by a flight attendant who works as a small-scale silicone salesman. All of these transactions are done one-on-one through informal contacts. She said that the man whom she used to buy the silicon from would bring a gallon, which is worth approximately US$1000, but has a street value of US $8000 in Puerto Rico. This is usually sold in one-ounce bottles, each costing between US$80 and US$100.
>
> As we talked, Jessica was looking straight at me and poking my body with her fingertips to describe various injection procedures. 'If you want to inject here (poking my chest), you need one kind of silicone, but here (gesturing towards my face), you need something different.' She said that despite her skills with injection, she has never wanted to inject people in the face, since this is a delicate area and any small mistake can be much more noticeable. Instead, she advises many of the *chicas* (girls, meaning transwomen) on how to do the *caderas* (hips) or the *bunda* (butt, using the Brazilian Portuguese term) – the latter being an area that many of them want to enhance.
>
> I asked her to elaborate on the *bunda*, and Jessica explained that many of the *chicas* want large *bundas* with exaggerated curves, and sometimes they have asked her to make it extremely large. Jessica says that she advises them not to do too much at once, and that there can be complications or it may look unnatural. She sometimes advises women to 'just do 8 oz per side' … I stopped her to clarify the price, and she calculated: '8 oz would be US$800.' … Later, she also added that the problem

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> with the illegality of these procedures is that if something goes wrong, no doctors will treat them, since the procedure was illegal from the beginning…
>
> Jessica explained in detail what happens when a person is injected with silicone. She said that the procedure is to slowly inject the viscous silicone into the area, massaging it to distribute it evenly and avoid bubbles or lumps. Then, while carefully withdrawing the needle, the *inyeccionista* puts a few drops of Krazy Glue on the injection site to close it, and then covers it with a cotton ball. Then the patient is instructed to be very still for a few days to avoid silicone leakage. The Krazy Glue hardens as a kind of synthetic scab, eventually wears off and the site will naturally heal in most cases…
>
> Jessica described one of the main problems with silicone injection in the breasts. *Los senos se ponen duros* (the breasts get hard). She said that over time, the areas of silicone injection get hard and feel less natural, and that her sex work clients often make comments about her breasts (*Son tan duros!* They are so hard!), and this makes her feel bad. But she lamented that there is little she can do, because liquid silicone travels around inside the capillaries and tissue, and is very difficult to remove…

This field note is typical of regular conversations we had with two *inyeccionistas* while conducting our ethnographic observations, and echoes other stories we heard from transwomen about these individuals. While many transwomen know the basic techniques of silicone injection, and some dabble in injecting themselves or others, a small number of individuals develop a reputation as skilled *inyeccionistas* and serve a large clientele. *Inyeccionistas* are typically members of the transgender community or are considered insiders within lesbian, gay, bisexual and transgender spaces, and are well-known figures that broker global transactions with informal silicone suppliers. Our survey data indicate that while one-quarter of participants reported having injected silicone (24%), most of the participants who had injected silicone had used an injection specialist (64%), followed by a friend (57%), a physician (50%) or an unknown individual (36%) (Table 3; multiple answers allowed). The physicians reported in the survey are most likely physicians practising in other countries where gender transitioning procedures are sold as medical tourism packages to transwomen, as we have described in detail elsewhere (Padilla et al. 2016).

The injection specialists with whom we spoke described procedures and protocols – such as the use of massages for silicone dissemination and Krazy Glue for injection site treatment – that have emerged as specialised knowledge within trans social networks. One well-known injection specialist – Joaquin, a gay-identified man who was a 'mother' (*una mama*) in the house ball community – told us that he had achieved better clinical results in his injection procedures because he imposes his own rules regarding how much silicone should be injected per session, and he carefully instructs his clients regarding the proper massaging techniques around the injected area during the days following the procedure 'to avoid it getting encapsulated' under the skin, resulting in uneven lumps. This single *inyeccionista* provided most of the injection procedures that transwomen described to us during our ethnographic research. He provided the most well-respected and economically attainable procedures within what might be described as, following anthropologist Joao Biehl, 'a zone

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of social abandonment', a social space defined in large part by the retreat of the public services, medical neglect and increasingly inaccessible privatised medical systems operating under conditions of global neoliberalism (Biehl 2013).

In addition to silicone, our research documented the informal exchange of injectable hormones, which are also available through clandestine markets and in some neighbourhood pharmacies in Puerto Rico. Our participants most often described obtaining hormones through the *mercado negro* (black market), and some *inyeccionistas* also provided hormones. Injectable hormones on the street often come from Mexico and were used by most of our participants at some point in their transitioning process. Knowledge about sources, dosing, injection techniques and the effects of hormones on the body and the mind circulates within transwomen's social networks and sex work areas. This knowledge – and the mentoring relationships, friendships and kinship systems within which they are embedded – provide critical community resources for gender transitioning in the context of social abandonment.

## Social exclusion and resilient social networks

In our analysis, we identified several expressions of health care discrimination that functioned as mechanisms of social exclusion. One of the major barriers faced by transwomen in Puerto Rico is the difficulty accessing competent and culturally sensitive health care providers. As one of our participants, Margarita, put it, 'The problem here is that plastic surgeons don't want to provide services to transwomen; they call us men and tell us that they don't do breast implants on men.' Gaby mentioned that she had a hard time identifying a health professional who could prescribe hormones: 'I started to look for physicians … [and] they told me, "I don't know what you are talking about" [regarding hormones]. They saw me like a really weird thing because I said I needed hormonal treatment for my transition.' She highlighted the overt discrimination she experienced with a health care provider: 'Health care providers have told me: "I don't deal with people like you", and I told him: "well I thought medicine has no borders!"'

While experiences of medical exclusion are traumatic and contribute to the multiple health vulnerabilities that transwomen face, they also function to strengthen their social support networks, since other transwomen often become critical resources in the transitioning process. Annie mentioned that her *mama* was the one who supported her during her first silicone injections:

> My mother from the community, let's say … She gives you a last name, which means she is your mother … When you first get to the street she's someone who helps you … She told me: 'Hey, *loca* [literally, 'crazy woman', meaning effeminate gay man or transwoman], if you want to do that [silicone injections] get on with it and give me the money! I'll keep it safe.'

Elba echoed aspects of this story, but described her primary source of support as a mentoring relationship: 'I had like a mentor during my transition process that was one of my best friends … and she was a role model and supported me emotionally.' Often the information obtained from other transwomen motivates individuals to begin their own transition, since they provide successful examples of procedures and the informal contacts needed to obtain them. For example, Jenny mentioned: 'I met a person who has finished her transition …

That is when I said: "let me see how she really did it" to learn from her and see if the transition is really worth it.'

In sum, transwomen's exclusion and invisibility within the health care system contributes to the generation of resilient social networks, which provide, however incompletely, for their physical, emotional and gender transitioning needs. However, these social networks also facilitate the use of informal transitioning procedures such as silicone injection by disseminating knowledge about them, aiding the neophyte with practical assistance and insider contacts and providing general encouragement in the community to avail oneself of the services provided by *inyeccionistas* such as Joaquin. Due largely to medical abandonment, informal silicone and hormone injection is normalised in Puerto Rican transgender communities, and therefore assimilation to the trans community entails a growing familiarity with the use of such procedures on an almost daily, routinised basis.

## Cultural beliefs and motives for injection

Largely because of the experiences of social exclusion and stigma that transwomen experience, many of the participants with whom we spoke stressed the importance of being perceived as *una mujer biologica* (a biological woman) or *una mujer completa* (a complete woman). In general, such comments make reference to the desire to pass socially as a cis-gender female and, hence, be treated as such in public space or when attempting to access social and health care services. All of our participants were keenly aware that the ability to pass was tied directly to material and social resources, and thus practices of injection – as well as other body modification procedures – were 'investments' with very real consequences. This can be seen in the way that our participants talked about their bodies as constraints on movement or social relations.

For example, Consuelo made the following reference when discussing her decision to go into the public restroom for women:

> *Consuelo*: Since I don't have voluptuous breasts, I put my purse here [positions purse under arm], and I try to navigate into the women's bathroom. You understand? To feel comfortable if I see there is nobody, I close the door completely and do my business as quickly as possible, right. In order to give time to the other ladies, I wash my hands and keep walking.
>
> *Interviewer*: So, you regularly go to the women's restroom?
>
> *Consuelo*: [affirming] I go to the women's restroom … but I'm ashamed that they might think something, might read me. Read me and discover that I'm not … a complete woman. And be ashamed.

Consuelo illustrates a meta-theme we identified in our analysis: the tendency for participants to describe inadequacies or insecurities regarding certain bodily features when they talked about navigating public spaces. The danger of being 'read' (i.e. identified as a transwoman rather than a cisgender woman), as Consuelo describes it, is connected to the fact that she 'doesn't have very voluptuous breasts'. Similar comments were made in our interviews about large body sizes, masculine-appearing hands, overly skinny hips, pronounced Adam's



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apples and so on. These characteristics become markers of gender non-normativity when navigating public space, and cause considerable stress and anxiety.

Motives for silicone and hormone injection were therefore embedded in strategies for passing in everyday life. Many participants who had been injected by an *inyeccionista*, for example, expressed a decision-making process similar to Elba, a graduate student at the time, who explained as follows why she decided to have silicone injected into her buttocks:

> Well, look, I think that it's all been a strategic plan. I mean, obviously I didn't have – My body was fine as it was, it was quite an ugly body, very skinny. And I know that as the years pass my body will continue changing. That is, if I don't begin to feminise a little more my anatomical structure, physical, more with the feminine norm, well it could have counterproductive effects in terms of the line, the opening towards my line of work and the spaces I want to reach.

Margarita made a similar argument when she describes the changes she perceived in her social and work life after beginning informal hormone injections:

> When I started to take hormones, I had a strongly masculine structure. I hadn't had electrolysis as needed, and in that transformation process people saw the gender contrast and started the jokes, rejection, discrimination, condemnation and closing of doors. I had to – In order to look for work, I had to use my male name and dress with neutral or manly clothing to work. If I went as a woman they rejected me and even fired me and everything.

The desire to achieve a certain gender standard often combined with a more instrumental knowledge of the stakes that are involved in these decisions. Participants were profoundly aware of the ways that feminisation procedures could affect one's social status and class mobility, and this further motivated them to pursue informal silicone and hormone injection as a part of their prospects for employment and career advancement.

## Awareness of the consequences of hormone and silicone injection

Hormone and silicone injection are two of the most common procedures used for bodily feminisation among transwomen in Puerto Rico, and they are most often conducted without clinical supervision or follow-up, sometimes producing undesirable effects. The genre of the tragic story, of feminisation procedures gone awry, is pervasive. A number of stories within this genre were told as warnings, preoccupations or rationales for not engaging in these practices or limiting their use. These stories functioned as cautionary tales, sometimes told by older participants who used them to warn their younger peers of the dangers of overly rushed transitioning, not following appropriate procedures (post-injection massages to distribute silicone, for example) or using an unknown or questionable *inyeccionista*. We also heard similar stories from *inyeccionistas* themselves, often told to contrast their services with those of others who presumably used inappropriate or unethical techniques, or injected excessive amounts of silicone in a single session.

As described previously, Joaquín, the most popular *inyeccionista* we interviewed, often contrasted his services with those of his imitators, whom he characterised as obsessed with over-filling their clients, leaving them with ugly lumps and sagging *bundas*. He explained

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that 'in Puerto Rico there is a problem with silicone', cryptically describing a case of a transwoman who had been over-injected and whose 'buttocks exploded'. The important point here is the function of such horror stories in marketing his services, and in reducing the harms associated with over-injecting. Joaquin believed that if the conditions are hygienic and the person is healthy there will be no health consequences from the procedure, and that people will be pleased with the results. While his preoccupation with his own techniques and experience demonstrates the ethnomedical knowledge accumulated by experienced *inyeccionistas*, his health claims are not informed by the clinical and public health literature on the carcinogenic effects of liquid silicone injection, unmentioned in his instructions to clients.

Silicone injections are practices that can entail permanent damage to transwomen's bodies, but knowledge about these effects is uneven in the community. Many participants shared negative experiences that they had witnessed with other transwomen. For example, several participants had witnessed the problem of silicone migration within the body, a common negative effect. During an interview with Karla, who was describing a friend's recent experience with silicone injection, the interviewer asked, 'So, it [the silicone] spread?' Karla responded, 'Yes … She had to move it from her leg to her buttocks using a rolling pin. It was a mess.' Another participant, Marta, elaborated on a similar instance of silicone migration:

> Instead of being beautiful they [those who get silicone injections] are monsters. Look at that case when the silicone spread to the calf. It was traumatic because she didn't have anyone to sue. She couldn't do anything because everybody knew that she was doing something illegal. To make matters worse she is a sex worker and does drugs. So, she has one calf that is bigger than the other … I don't know if she is emotionally affected by that, because they don't say. They won't say if the *teta* [breast] is down there [gesturing low on the torso].

Other participants described how the silicone injections felt, emphasising the sense of damage to the body: 'When she starts to inject me with silicone, you feel that something is breaking inside you. And you say "Oh my god! What is this?" It's a sensation that you can't explain.' One 73-year-old participant displayed during the interview the bandages that she was still wearing following recent surgery she had undergone to extract the now-damaged tissue surrounding her breasts, where she had obtained extensive silicone injections many years prior.

Several participants described negative consequences linked to hormone use, most often referencing mood swings and imbalances in the endocrine system (e.g. hair loss, fatigue, weight changes, water retention, loss of libido and changes in erectile function). Luisa, for example, shared the following with us: 'I have used many, many, many hormones. Every kind of hormone, thus my liver is suffering. Once I went to the hospital and then I discontinued [it].' Other participants mentioned additional negative side effects resulting from hormone use. Alicia explained that 'I had hair loss … I lost weight and had problems concentrating …. Obviously [there are] changes in my appetite … Your body is like … like crazy. Your body is crazy because it's fighting the testosterone.' Several participants explained they had to learn to control their hormonally driven mood swings. For example, Patricia observed that 'people notice [when I'm using hormones] because I have mood

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swings. Hormones make you a *rebulera* (trouble maker) … but not me. That happens because people don't know how to control themselves. I know how to control myself.'

According to some participants, one important factor related to the negative effects of hormone use was that transwomen usually have a 'more is better' approach (more hormones equals quicker bodily changes). For example, Camila observed, 'The doctor prescribes a particular dose of hormones. "This is your dosage" [simulating the doctor]. Then [my friend] started to take double or triple the recommended doses, and she went crazy.' This demonstrates the potentially serious implications of hormone use without appropriate guidance and follow-up by a physician familiar with gender transitioning. In the context of medical abandonment, many of our participants believed they knew more about appropriate dosing than local physicians. However, few of them had ever had the chance to speak to an informed physician about their gender transitioning process.

## Discussion

Our goal in this paper has been to describe the social context of silicone and hormone injection practices among Puerto Rican transwomen, drawing on our ethnographic data, in-depth interviews with transwomen and descriptive statistics from the survey. Our research demonstrates that among a sample of transwomen recruited in San Juan, more than three-quarters had used hormones, and among these nearly half reported using injectable hormones or combining these with pills. One-fourth of the sample had injected liquid silicone, and this was most often performed by an injection specialist. These injection specialists, or *inyeccionistas*, are integrated into a global market for silicone and hormones that are exchanged through social networks and a street-based economy that provides illicit gender transitioning products and services within an economy of scarcity. These informal markets not only emerge as a consequence of the 'economic demand' of transwomen, but also from processes of social exclusion that effectively deny these individuals even the most basic transgender care and social services. Our research attests to the near total lack of access to physicians trained in transgender care, which have been documented in our published work and in other studies of transwomen in Latin America (Aguayo-Romero et al. 2015; Padilla et al. 2016).

Knowledge about body modification techniques and their effects on the body and the mind circulates within transwomen's social networks. We have described cultural notions of beauty and passing among transwomen, many of whom viewed bodily feminisation as an essential aspect of identity, social acceptance and career advancement. Transwomen with whom we interacted often shared horror stories of body modification among their peers, which function as cautionary tales and are driven largely by the lack of accessible and trans-sensitive information available. Sub-cultural knowledge – and the mentoring relationships, friendships and kinship systems within which they are embedded – provide critical community resources for gender transitioning in the context of social abandonment.

Our research emphasises that sub-cultural practices of lay hormone and silicone injection have not emerged in a vacuum. They are resilient responses to processes of intense social exclusion and institutionalised discrimination, and also, somewhat ironically, can exacerbate

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exclusions from clinical settings as individuals weigh the potential risks of untrained or discriminatory medical practitioners. From the perspective of many Puerto Rican transwomen, clinical settings are not sources of care, but treacherous places that might complicate their informal transitioning.

Our findings are consistent with a recent intersectional analysis of health risk behaviours among transwomen of colour by Sevelius (2013). Drawing on psychological and sociological theories of gender, Sevelius advocates a Gender Affirmation Framework for conceptualising risk behaviour in this population, and summarises her argument as follows: '[S]ocial oppression decreases access to gender affirmation while psychological distress increases the need for gender affirmation, which is associated with identity threat. Attempts to decrease the threat then happen in high risk contexts, where risk behaviour is more likely' (2013, 685). Our research is consistent with many of the arguments put forth by Sevelius, specifically the combination of intense social marginalisation, institutionalised transphobia, a near total lack of gender affirmation from the society at large and highly constrained access to specialised transgender health care. In such contexts, Puerto Rican transwomen seek validation for their gender identities through their access to street economies in which clandestine practices easily circulate, but which may have highly problematic consequences for their health.

## Conclusion

While injection practices have been described in several ethnographic studies among trans communities (Bailey 2013; Kulick 1998; Namaste 2000; Newton 1979), discussion of their public health implications and the factors to be considered in developing culturally appropriate interventions have been largely absent. The lay injection of hormones and silicone has the potential for links to health conditions for which transwomen have high prevalence rates in general, such as HIV and hepatitis C infection. While we found no reported sharing of injection equipment among transwomen in this study, in an injection-driven HIV epidemic such as that in Puerto Rico, it is critical to identify and address any emerging drug injection practices in the transgender population before they result in incident cases and epidemiological connections to local drug injection epidemics. At the present time, our research suggests that infection risks associated with the use of injectable silicone are primarily related to the sanitary conditions of the procedures. In addition, medically unsupervised injection provides no means to regulate or enforce clinical protocols or procedures for infection control, orient patients of the health effects of these procedures or provide medical follow-up.

There has been no formative intervention research focusing on best practices for addressing medically unsupervised injections in transgender communities. We follow the recommendations of the Center of Excellence for Transgender Health, which underline the importance of reducing the prevalence of lay injection practices through educational interventions on the risks and alternatives, and training medical providers to make gender-affirming care more accessible (Sevelius 2013; Zevin and Deutsch 2017). Our research in Puerto Rico strongly supports incorporating trained peer counsellors or community health promoters to disseminate information on the risks associated with lay hormone and silicone

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injection. Stories of negative outcomes of unsupervised injections already circulate within the transgender community, and might be harnessed to generate critical reflection on the risks associated with these practices, and alternatives that might be available. We also recommend interventions that work closely with *inyeccionistas* to reduce high-risk behaviours and foster referral systems for the management of acute emergencies. Because *inyeccionistas* are highly respected in the transgender community and are more often consulted than physicians, attempts should be made to incorporate these individuals as trained promoters who could replicate educational messages and refer cases to trained clinical providers. Harm reduction interventions with these individuals are an essential component of a multi-level response. While the profit motive, competition among *inyeccionistas* and the illegality of these procedures may impose challenges for such collaborations, future harm reduction interventions might incorporate an anonymous hotline or other forms of referrals to clinical care or consultations in the case of acute emergencies.

What is most clear in our research is that behavioural interventions to reduce the immediate health risks of informal hormone and silicone injection in Puerto Rico are insufficient to shift the fundamental causes of health vulnerability for transwomen. Structural interventions and policy initiatives should be implemented to reduce stigma and educate the population and public health officials on the health effects of stigma and the social exclusion of transwomen. Civil society organisations serving transwomen and leaders from the trans community should be encouraged to participate in collaborative public health initiatives to improve transgender health care access. Structural interventions in medical schools should provide physician training in transgender health, stigma reduction and the dissemination of international protocols for appropriate clinical guidance throughout gender transitioning. Finally, legal and policy changes to provide public assistance for gender transitioning and systems of accountability to track the use of global standards of care would further reduce the need to use informal gender transitioning technologies. The combination of these initiatives could shift the calculus that informs many transwomen's decisions regarding lay injection procedures, and permit the development of safer, gender-affirming, broadly accessible options.

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## Table 1

Age, household composition and residence of transgender women from in-depth interview sample ($N = 39$).

| | *N* | % |
|---|---|---|
| Age (Mean = 29) * | | |
| 21–29 | 24 | 61.5 |
| 30–39 | 8 | 20.5 |
| 40–49 | 4 | 10.3 |
| >=50 | 2 | 5.1 |
| Household composition | | |
| Alone | 13 | 33.3 |
| With partner | 4 | 10.3 |
| With family | 17 | 43.6 |
| With friend | 4 | 10.3 |
| Residence | | |
| San Juan metro | 26 | 66.7 |
| Mayaguez | 8 | 20.5 |
| Other | 5 | 12.8 |

*One missing value due to unreported age.

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**Table 2**

Marital status, education and current employment of transgender women from in-depth interview sample ($N$= 39).

| | *N* | % |
|---|---|---|
| Marital status | | |
| Single | 33 | 84.6 |
| Consensual union | 5 | 12.8 |
| Divorced * | 1 | 2.6 |
| Education | | |
| HS incomplete | 5 | 12.8 |
| HS diploma | 12 | 30.8 |
| Some university | 8 | 20.5 |
| Associate degree | 3 | 7.7 |
| BA or equivalent | 10 | 25.6 |
| Some graduate school | 1 | 2.6 |
| Current employment | | |
| Sex work | 13 | 33.3 |
| Cosmetology / *estética* | 12 | 30.8 |
| *Transformista* / drag performer | 6 | 15.4 |
| Sales / fast food | 7 | 17.9 |
| Other | 14 | 35.9 |

*One participant achieved legal recognition of change of sex in the 1970s, permitting her to marry legally (and later divorce).

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**Table 3**

Survey data on the injection of hormones, silicone and IV drugs ($N = 59$).

| **Hormone injection** | ***N*** | **%** |
|---|---|---|
| Had used hormones | 46 | 78 |
| Injected | 5 | 8 |
| Combined (injected and oral) | 22 | 37 |
| Injection performed by (multiple answers allowed) | | |
| Themselves | 13 | 22 |
| Friend | 12 | 20 |
| Physician | 3 | 5 |
| Injection specialist | 3 | 5 |
| Unknown person | 2 | 3 |
| Other | 5 | 8 |
| Shared needles for hormone use | 0 | 0 |
| Knew of needle exchange programmes | 0 | 0 |
| Silicone injection | | |
| Had injected silicone | 14 | 24 |
| Injection performed by (multiple answers allowed) | | |
| Injection specialist | 9 | 15 |
| Friend | 8 | 14 |
| Physician | 7 | 12 |
| Unknown person | 5 | 8 |
| Other | 3 | 5 |
| Shared needles for silicone use | 0 | 0 |
| Other injected substances | | |
| Biopolymer | 8 | 14 |
| Mesotherapy (for weight loss) | 7 | 12 |
| Collagen | 4 | 7 |
| Other | 1 | 2 |
| Injection drug use | | |
| Injection drug use | 1 | 2 |
| Shared needles for injection drug use | 0 | 0 |