

On Coba and Cokok: youth-led drug-experimentation in Eastern Indonesia

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The everyday lives of contemporary youths are awash with drugs to boost pleasure, moods, sexual performance, vitality, appearance and health. This paper examines pervasive practices of chemical ‘self-maximization’ from the perspectives of youths themselves. The research for this paper was conducted among male, female and transgender (male to female, so-called *waria*) sex workers in Makassar, Indonesia. It presents the authors’ ethnographic findings on how these youths experiment with drugs to achieve their desired mental and bodily states: with the painkiller Somadril to feel happy, confident and less reluctant to engage in sex with clients, and contraceptive pills and injectable hormones to feminize their male bodies and to attract customers. Youths are extremely creative in adjusting dosages and mixing substances, with knowledge of the (mostly positive) ‘lived effects’ of drugs spreading through collective experimentation and word of mouth. The paper outlines how these experimental practices differ from those that have become the gold standard in biomedicine.

Keywords: youth; pharmaceuticals; sexuality; enhancement; experimentation

Introduction

The everyday lives of contemporary youths are awash with drugs to boost pleasure, moods, sexual performance, vitality, appearance and health (Hardon, Idrus, and Hymans 2013). A growing body of sociological and anthropological studies, mostly conducted among student populations in affluent societies, indeed points to the ‘pharmaceuticalization’ of youths’ everyday lives (e.g. Hurwitz 2005; McCabe et al. 2008; DeSantis, Webb and Noar 2008; Williams et al. 2008; Elliot 2011). Many of these studies have focused on the abuse of prescription drugs – painkillers, cognitive enhancement drugs and other substances with psycho-active properties – which circulate freely through youth networks alongside illegal drugs such as amphetamines and cocaine. It is noteworthy that prescription drugs are often seen by youths (and adults) to be safer and less addictive than illegal narcotics. Cognitive enhancement drugs such as Ritalin are widely used by college students to stay awake and to aid concentration and memory (McCabe, Teter, and Boyd 2006; DeSantis, Webb, and Noar 2008), high school girls are turning to antidepressants to provide energy and relief (Knudsen, Hansen, and Eskildsen 2003), and the imperative to socialize is fuelling the use of analgesics meant to treat headaches (Hansen, Hansen, and Holstein 2008).

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At first glance, all this seems to confirm the state of modernity described by Nicholas Rose: one in which we no longer see biology as destiny, but seek to endlessly modulate, adjust, and enhance our neurochemical and somatic selves (Rose and Novas 2005; Rose 2007). Scholars have traced this medicalization of everyday life to three broad developments: (1) governments, confronted with burgeoning expenditures for healthcare, are encouraging citizens to take responsibility for their own long-term health; (2) biomedicine produces novel understandings of health, which provide new opportunities for intervention; and (3) pharmaceutical firms use new and disconcerting health facts to promote disease awareness and consumption of their blockbuster drugs (Medawar and Hardon 2004; Rose and Novas 2005; Rose 2007; Dumit 2012). Whereas medicine previously focused on treating pathology, we have come to see ourselves as inherently ill and in need of constant treatment (Nichter and Vuckovic 1994).

But something different seems to be going on with youth, who are inclined to ignore government health messages and are rarely concerned with their longevity or possible future ill-health. Franke, Lieb, and Hildt (2012), for example, show that students do not differentiate between taking drugs such as Ritalin and drinking coffee. And as McKinney and Greenfield (2010) have argued, too much emphasis on governmentality and biopower ignores the symbolic and social dimensions of drug use among youths, where we see a pervasive trend towards the experimental use of prescription drugs for purposes other than what they were originally intended for. In this process of self-medication to alter one's mental and bodily states, youths appropriate information spread by pharmaceutical firms to increase disease awareness – not to determine whether they are 'chronically ill', but to find out which symptoms they should report to their doctors to acquire their desired prescriptions (Harrison, Edwards, and Parker 2007; Gordon, Forman, and Siatkowski 2006).

In a very different context, how young people appropriate pharmaceuticals for their own aims can be seen in how transgender youths use hormones to transform their bodies to align with their desired gender identities (Kulick 1998; Sanabria 2010, 2013). Sanabria has shown how Brazilian *travestis* use informally obtained oral contraceptive pills, hormone replacement therapies, and hormonal contraceptive injections as part of their projects of bodily transformation. In line with their ideas about sexuality and embodiment, biologically male *travestis* consume high dosages of hormones designed for physiological females to produce a feminine disposition and figure, reduce their bodily and facial hair, soften their skin and change their voice, in sum to '*quebrar o machão dentro da gente*' (lit. 'break the macho inside us').

This paper presents such practices of self-medication among two groups of young people in Makassar, Indonesia: a loose network of five female and five male 'freelance' sex workers operating around the Losari Beach entertainment district, and a group of male-to-female transgender youths who sell sexual services near the popular Karebosi Link shopping mall. Both groups use pharmaceuticals for effects that are not biomedically sanctioned. This paper examines how youths 'try out' various products to establish what works best for them, pointing to the sociality of this experimentation. It shows how the authors' informants, with very limited biomedical knowledge, creatively and jointly tinker with their bodies and minds to facilitate their working lives and to achieve their desired gender identities. How does their collective experimentation construct knowledge on pharmaceutical efficacy? How do they develop their own modes of administration? How does information on drugs and practices circulate? In the conclusion, we examine how collective experimentation by youth differs from how evidence is produced in biomedicine, where drug effects are measured in individuals as pre-determined biological

end-points that generally do not include the social effects as experienced by ‘situated’ users (Epstein 2003; Wieringa et al. 2005). We suggest that it is useful to examine how youth craft and assess drug effects in relation to their situated needs and desires, and how their experimental practices differ from those that have become the gold standard in biomedicine.

Setting

Makassar, the provincial capital and largest city in South Sulawesi (population 1.4 million) is a vibrant magnet for youths as they seek to work, study and move on in life. As youths migrate to such urban centres, they encounter consumer products and messages from around the world (Nilan and Feixa 2006; Hansen 2008). While these media images encourage consumption and ‘imagination’ (Appadurai 1996), they often also sharpen feelings of exclusion and marginality (Comaroff and Comaroff 2001; Cole and Durham 2008). Youth in Makassar have limited internet access; smart phones are generally too expensive for them while internet access remains slow and cumbersome. The most important health resources for Makassar’s youth are thus the omnipresent street corner *apotek* (pharmacies), which sell a broad range of ostensibly prescription drugs without prescriptions, and information that circulates via word of mouth within youth networks.

In many ways, the authors’ informants belong to what Mike Davis has termed the ‘outcast proletariat’ – a ‘mass of humanity structurally and biologically redundant to global accumulation’ (Davis 2006, 11). Poverty is the most significant factor influencing entry into the sex trade in contemporary Indonesia (Hull, Jones, and Sulistyaningsih 1999; Ford and Lyons 2007). Indonesian social and moral codes require that children, particularly female children, financially support their families (Ford and Lyons 2007); earnings from sex work allow women and men from poor backgrounds to fulfil their social obligation of supporting their parents, siblings, or children until they are themselves married.

The informants were all aged between 18 and 24. Most had finished high school. On Losari Beach, the authors’ interlocutors advertised their services and had customers referred to them by friends and *becak* (tricycle) drivers working on commission, and combined sex work with other income-generating activities such as shop-keeping, selling drinks on the beach and providing massages. Most of the authors’ transgender informants at Karebosi had daytime jobs in beauty parlours and augmented their income through evening sex work on the street.

Methods

The research in Makassar was part of the larger ChemicalYouth project, which examines the pervasive use of chemicals by youths in France, the Netherlands, the Philippines and Indonesia.¹ The fieldwork in Makassar was conducted in two phases. The first involved a ‘grand tour’ of the breadth of chemicals consumed by youths in their everyday lives, including cosmetics, stamina-enhancing products, contraceptives, and mood-enhancing drugs. The findings of this initial grand tour have been published elsewhere (Hardon, Idrus, and Hymans 2013).

The grand tour made use of a new research instrument, which the authors coined the ‘head-to-toe interview’. In these interviews youths were asked which chemicals they applied to their hair, eyes, face, lips, teeth, and so on, over their entire bodies, ending with their toenails. In individual and group interviews, more general themes were also

pursued such as their future aspirations. The interviews took place in cafes, bars, and other places where youths regularly met, depending on where they felt most comfortable talking about their use of chemicals.

During the authors' grand tour of chemical use in Makassar, their attention was drawn to the painkiller Somadril (officially available only via prescription but in practice freely available over the counter) when the sex workers among the informants wanted to talk about nothing else. Sex workers, however, were not the only ones who admitted to the off-label use of Somadril. Students, waiters, waitresses and shop attendants reported taking Somadril to help them socialize and to increase their libido. But as it made them feel dizzy and drunk, a condition hardly conducive for them to study or work, they took only one or two (and at most three) pills a day. The intravenous drug users who were interviewed made frequent mention of Somadril, but for them it was a second-choice drug; they preferred Calmlet (a drug containing the tranquilizer alprazolam) and Suboxone (containing the heroin-replacement drug buprenorphine). And while the transgendered informants also often mentioned Somadril, they were clearly much more interested in hormones to transform their physical bodies.

The second phase of the project involved focused ethnographies of chemical practices that emerged as central in the everyday lives of specific subgroups of youth, including the use of Somadril by sex workers and the use of contraceptive hormones by transgender youths. The focused ethnographies involved participant observation in the sites where the interlocutors work and socialize, focus group discussions, and feedback and validation sessions.

Being confident at Losari Beach

At the first site, Losari Beach, the authors' sex worker informants related enthusiastic stories about the painkiller Somadril, which they took in large quantities to feel happy, confident and less reluctant to have sex with their clients. The informants work freelance and live in a nocturnal peer group that shares everything, helping each other gain customers and sharing in the proceeds. If one has a customer, they use the proceeds to buy Somadril for all. They earn around US\$30 from each customer, enough to buy ten strips of Somadril.

Somadril is registered in Indonesia as a 'strong medicine' (*golongan keras*), meaning that it should only be sold via prescription. It is recommended in the Indonesian *Informasi Specialite Obat* (ISO Indonesia 2010) pharmaceutical compendium for lower back pain, muscle spasms, tension headache, painful menstruation, and other ailments such as chronic arthritis. The active component of Somadril (sold under the Soma brand in the USA) is carisoprodol, which entered the global market as a muscle relaxant more than 50 years ago. Developed by Wallace Laboratories, Soma was thought to have superior muscle relaxing properties and less potential for abuse than Milltown (containing meprobamate), the drug it replaced (Berger et al. 1960). Milltown, the first blockbuster tranquilizer to appear on the American market, was widely used 'off-label', including on the Hollywood party circuit where it appeared in a cocktail with dry martini that people called a 'Milltini' (Tone 2009).

The 1980s and 1990s witnessed growing concern over the abuse of Soma in the USA, with clinical researchers reporting withdrawal symptoms such as insomnia, vomiting, tremors, muscle twitching, anxiety and hallucinations among patients who ceased taking it (SAMHSA 2003; DEA 2011). This eventually led to carisoprodol being listed as a Class IV drug (i.e. accepted for prescribed medical use but flagged for its risk of physical

or psychological dependence). In Europe, evidence on the abuse potential of carisoprodol has led to its withdrawal from the market (EMA 2007).

The authors' informants at Losari Beach were enthusiastic about the effects of Somadril. They repeatedly stated that it made them feel *pede* (confident), *enak* (delicious, a term used for food but also for sex) and *senang* (happy). Feeling more confident and/or less shy is important for sex workers to attract and accompany their guests, as Samsul notes in a chemical-use diary that we asked him to keep: 'I have taken four pills of Somad, and five pills of LL, because if I am not taking Somad I have no confidence to accompany my guests, and no desire to look for them.' Another entry in his diary stresses the uselessness of the cheaper psycho-active drug LL for his work: 'I didn't have money to buy Somad, so finally a friend gave me LL, but my eyes blurred and I looked like a fool. . . . I just kept on laughing, acting like a madman.'

The informants at Losari Beach used different techniques to enhance the effects of Somadril. Some chewed the pills; others took them with Sprite (a soft drink commonly used as a solvent for drugs in Indonesia). Some mixed Somadril with whisky or vodka. As 20 year-old Rina stated: 'If you mix it with an alcoholic drink, the effect is sure to be great.' Youths also mixed Somadril with other psycho-active prescription drugs such as Calmlet (a tranquillizer containing alprazolam) or Tramadol (a pain-killer with narcotic properties). Over time, the authors learnt that some Cafés sell fruit and vegetable shakes containing Somadril for clients who ask for this illicit mix. Reflecting underlying hot-cold notions of chemical efficacy, the informants told the authors they buy *pedas* (hot) food, which makes them sweat and which enhances the high. They also wore warm jackets and avoided cold drinks and the wind, which they said weakened Somadril's effects. In discussions, the informants routinely pointed to differences in how their peers used the drug and the effects they experienced.

To better understand the diversity in the 'lived effects' of Somadril, the authors asked a subset of the sex workers with whom there was a good rapport to fill in a four-day recall, detailing the drugs they had consumed and the effects they had experienced over this period. These recalls revealed that their consumption of Somadril often far exceeded the recommended maximum dosage of four pills (800 mg of carisoprodol) per day (ISO Indonesia 2010). It was noticed that men who took higher dosages of Somadril reported more side-effects (and more often nausea and vomiting) than women, who more often complained about feeling dizzy. All but one of the informants reported suffering on days when they did not take Somadril. When they could not score enough Somadril to achieve their desired high, they mixed or substituted it with cheaper psycho-active drugs such 'LL' or 'Dextro' (dextromethorphan, a cough medicine sold in generic containers in pharmacies). But both Dextro and LL are not very strong, according to the informants.

Over time, the authors came to realize that the lion's share of the informants' income was going to support their Somadril habit. The authors wondered whether the drug facilitated the work of their informants, or whether they were now working to buy Somadril. For most of them, it seemed more important than food; indeed many of them admitted to being addicted.

Being attractive in Karebosi

At the authors' second site in Makassar, a sidewalk along a busy street near the popular Karebosi Link Shopping Mall, they engaged with a group of around ten transgender (male to female, so-called *waria*) sex workers. Previous studies have argued that many *waria* in Indonesia experience a dissonance between their female *jiwa* (soul) and male

bodies, which they try to resolve by ‘feminizing’ their physical bodies (Boellstorff 2004). *Waria* subjectivity is an attribute of male bodies; though they usually have sex with ‘real’ men, they are not seen as gay. Their sexual orientation is somewhat ambiguous; many *waria*, although wanting to appear ‘like’ women, enjoy penetrating their sexual partners. Bodily presentation thus appears more important than sexual acts in asserting femininity (Boellstorff 2004).

The *waria* informants in Makassar ‘performed’ femininity by dressing, talking and walking like women, and by tinkering with their physical bodies. Lacking access to sex reversal surgery – for those who may have wanted it – they resorted to the off-label use of contraceptive hormones (both pills and injections), the most important chemicals in their daily lives. The authors met their informants at their midnight work site where they wait for their ‘guests’. In discussions, the informants emphasized that their main aim in life is to be ‘like women’ and attractive to men. Dress, voice and how they walk are significant aspects of their desired femininity, as is having well-formed breasts.

To attain this latter goal, the informants used high dosages of hormonal contraceptive pills and injections. They explained how they ‘try out’ (*coba*) different pill brands such as Andalan, Marvelon, Microdion, Trinoldion and Microginon, and injections such as Cyclofem (all contain a combination of estrogens and progestins). They proudly showed the authors their breasts, squeezing them (and asking the authors to do so too) to show that they contain *batu* (hard tissue). Hard tissue in the breasts, they explained, is a prerequisite for breasts to grow and an assurance that if the dosage of hormones is lowered, the breasts will not disappear. But hard tissue alone is not enough. The hormones also need to form a *dasar* (base) for the breasts to make sure that they will grow in the right place.

To grow breasts in the right place with hard tissue inside, the *waria* informants in their self-treatment experimented with hormonal combinations that are *cocok* (compatible) with their individual bodies. In seeking the best ‘fit’, they balance the hormones’ beneficial effects (larger breasts, thicker hair, smoother skin and wasted muscles) and side-effects (nausea, diarrhoea, constipation, red facial spots, weight gain, and feeling dizzy, sleepy and lazy). All the respondents had long stories to tell about how they tried different brands of contraceptive pills and injections to see if they were *cocok* for them. Twenty-two-year-old Mince described how she switched from Andalan pills to Cyclofem injections and then to Marvelon pills. Andalan made her feel dizzy, sick and lazy. She gained weight and therefore felt less attractive as a sex worker. She switched to the contraceptive injection Cyclofem, taking one shot in each arm every week, which worked very well. Her breasts were beautiful; she had thinner muscles and a sexy behind. Having formed her breasts, she switched back to contraceptive pills, this time Marvelon, which she says causes muscular pain. But the pains are tolerable, she says, because they do not interfere with her appearance.

During a group discussion at a café following the first round of fieldwork, three of the informants explained they are now using a new regime of two Cyclofem injections weekly (one in each arm) and two pills of Marvelon daily. This combination had been advised to one of them by a private doctor in Surabaya, Indonesia’s second largest city. All three were very pleased with the results. They stressed that the place of the injections was very important. If you did not inject in the upper arms, you would not get a *dasar* in the right place. A fourth informant, whose mother had warned her of the dangers, had stopped taking hormones altogether. A fifth informant, who runs her own beauty salon, recommended going to Surabaya for silicone injections. She had done so two years ago when she was sick and tired of the side-effects of hormones. She proudly showed the authors her remarkably well-formed breasts.

Waria not only take hormones to fulfil their gender-bending desires; they also want to transform their bodies to increase their earning capacity. The informants often referred to the sexual desires of their customers when discussing the effects and side-effects of their drug use. For example, they experimented with different hormone dosages to maintain their capacity to penetrate their clients. While they share their experiential knowledge on the effects of various self-treatments, they do not pool their resources to sustain their chemical use.

Like the sex workers at Losari Beach, the authors' *waria* informants felt ambivalent about their drug use. When asked about the longer-term effects of their practices and their future aspirations, many admitted they were worried. One informant, who had recently shifted to injections, told about a friend who had died because her body could not absorb the heavy dose of contraceptive pills. Another stressed that the hormones can cause breast cancer; a third said she had heard pills can affect your heart. Although the informant with silicone breasts was not worried about any longer-term effects, others refrained from using silicone as they had heard it can spread in the body causing damage. While talking about their health concerns, the *waria* joked morbidly: "what if we die and still have breasts? How will they bury us?" Their awareness of other sexual health threats animated their concerns about life expectancy. Outreach workers had warned them about the risks of contracting HIV, providing them with condoms and advising them to get tested at the local community health centre. Their use of condoms, however, remained haphazard. Many clients want sex without condoms, while the informants, high on Somadril, often forget to use them.

On *coba* and *cocok*

These fieldwork vignettes reveal the creativity of young male, female and transgender sex workers in trying out – referred to as *coba* – adjusting dosages and mixing substances to achieve their desired bodily and mental states.² The sex workers at Losari Beach ingest high doses of Somadril to become confident and happy, mixing it with drinks, pills and hot food to enhance their combined effects. The leading concern of the transgender *waria* is to grow breasts – both to fulfil their gender-bending desires and to attract male customers. They first try to generate hard tissue and create a base for their breasts with relatively high levels of injectable hormones, after which they switch to maintenance therapy with lower dosages of pills.

The *waria* informants suffered a range of side-effects from taking high dosages of hormones. But each time they lowered the dosage, their breasts shrank again. The sex workers at Losari Beach suffered headaches and pains when they could not afford Somadril in large quantities. As both groups earn their livings by providing sexual services, side-effects that interfere with their capacity to earn are avoided. For the sex workers at Losari Beach, this means that they avoid other psycho-active drugs that blur their vision or make them lose control. They tolerate the sickness that comes with taking too much Somadril because they value the confidence and sexual pleasure that the drug provides. The *waria* seek to avoid side-effects that make them less attractive to their male customers, such as pimples and gaining too much weight, while tolerating others such as nausea that do not affect their capacity to earn a living.

Emily Martin (2006) in her seminal paper 'The Pharmaceutical Person' asks how people keep their ambivalence about drugs at bay while ingesting pills 'with all the disturbing side effects right there' (Martin 2006: 283). They do so, she argues, because something potent resides in the drug, something that makes them not want to think about harm. The

authors indeed found their interlocutors to be well aware of the side effects of drugs. The informants sought to optimize their good effects and minimize their bad ones by experimenting with different dosages, with different forms of administration (injecting or swallowing, with or without food) and with different drug combinations. The relational notion of *cocok* – compatibility – was a term that came up time and time again when youths described their experiences with drugs. Each sought a good enough ‘match’ between the substance and their bodies. If side-effects occurred, the substance and its form of administration were said to be not *cocok*.

Both in individual interviews and informal group discussions, the informants generally talked about the effects of drugs and their practices of self-medication with enthusiasm. But over time, the authors came to hear more about their concerns. They talked of friends who had died due to overdoses and reflected on their own lives. None expected to live long. This was part and parcel of the economic reality of their lives: the feeling that they were trapped, that they needed to use drugs to earn a living, was pervasive.

How experiential knowledge travels

How did the sex workers at Losari Beach – who do not have access to the internet where information on the off-label use of Somadril circulates – find out that this unadvertised drug for muscle pain makes them happy and confident? How did the *waria* learn that they first need to form hard tissue with injectable hormones before they can lower the dosage and take pills as maintenance therapy? In the focus group discussions where the authors asked about the lived effects of drugs, youths invariably referred to the experiences of their peers – a veritable storehouse of experiential knowledge. Indeed, youths primarily learned about the beneficial effects of drugs through word of mouth (*dari mulut ke mulut*).

This informal circulation of knowledge reflects the off-label use of these substances. While the drugs are not illegal, the interlocutors were well aware that they officially need prescriptions to obtain them. They were reluctant to give the authors information on the sources of drugs, and the authors did not push them to do so. But as their trust was won over time, many informants mentioned friends who work as pharmacists and pharmacy clerks as their sources. All knew about the several *apotek* that seem to specialize in selling psycho-active prescription drugs over the counter, apparently without repercussions. The friends to whom they referred are sometimes ‘experienced’ injecting drug users. Although the sex workers at Losari Beach do not fall within this group, they learn about the latest trends in mood-modification from their more experienced (boy) friends.

When injecting drug users were interviewed during the authors’ initial grand tour, they explained that they learnt about alternative psycho-active drugs from ‘floating prescriptions’ (Ecks and Basu 2009) written by rehab doctors and nurses. When they want new supplies, they just re-use the floating prescription or get new ones from ‘naughty doctors’, some of whom instruct their assistants to sell prescriptions for US\$3 each to young people in search of mood-modifying drugs.

The authors’ *waria* informants’ knowledge of contraceptive steroids, it was learnt, came via midwives, nurses and doctors, some of them working in the government family planning program. The private doctor in Surabaya, referred to above, prescribed the now-popular cocktail of two shots of Cyclofem weekly and two pills of Marvelon daily. The cocktail’s beneficial effects, as observed by one of the informants, led others to try out the same regime, and with excellent results. *Waria* do not need prescriptions to obtain contraceptives. They simply ask for them at the pharmacy and seek a friend who can inject the drugs.

What role did pharmacists play in the off-label use of pharmaceuticals by the interlocutors? The reality in Makassar is that most pharmacies are run by assistants, who simply sell the drugs. They do not see it as their role to educate customers. When the authors' informants mentioned pharmacists, they were referred to as friends, i.e. young people who are part of their network. Somadril, for which there is a high demand in the evening and at night, has become a street drug. The informants have the telephone numbers of dealers who they can call when in need of the product. They explained that some of the street vendors sell counterfeit Somadril. The interlocutors check for authenticity of the product by bending the aluminium foil of the strip. If it is stiff, the strip of pills is probably fake. These observations show that knowledge on the use of drugs and the drugs themselves travels across the boundaries of formal and informal sectors in unexpected ways (cf. Lovell 2006; Sanabria and Benguigui 2009; Wentzell 2011). Doctors sell prescriptions for the off-label use of drugs; midwives give advice to transgender persons on how to use contraceptives to grow breasts.

The authors' findings suggest that information on the harmful effects of drugs does not circulate as freely as that of their desirable effects. Whereas doctors and regulators in Europe and the US are well aware of the serious adverse effects of Somadril, this knowledge has apparently not reached the pharmacy assistants who sell Somadril in Makassar. While this information is given on the leaflets contained in the packaging, these did not reach the authors' informants in Makassar, where Somadril circulates in the informal economy as strips of pills without packaging. And while the contraceptive pills used by the *waria* interlocutors were accompanied by package inserts, these were seen to be directed at women. Instead, the informants learnt about the harmful effects of specific drugs through experimentation – that is, by experiencing for themselves and by exchanging notes with peers about what drugs do in and to their bodies. This method, while effective in revealing the immediate and common adverse effects of drugs, leaves much to be desired – most obviously concerning the longer-term effects of addictive substances.

Conclusion: on youth-led drug experimentation

These ethnographic case studies have revealed the pervasiveness of young sex workers' desires to feel attractive, happy and confident; how they experiment with different drugs and modes of administration to achieve their desired effects; how experiential knowledge circulates through youth networks; and in the case of Somadril, how youths pool their resources to support their drug habits. Among the key findings is that the authors' informants 'try out', or in their own words '*coba*', different drugs and techniques to assess the effects on their bodies and minds in what may be called *collective youth-led drug experiments*.

The experiments involve the 'off label' use of prescription pharmaceuticals – that is, for purposes other than their official indication. Such experimentation is not unique to the sex workers at Losari Beach and the *waria* at Karebosi. The ethnographic fieldwork in Makassar revealed similar patterns of experimentation among other groups of youths. Construction workers mixed energy drinks and potency products; hard-core drug users injected a veritable cocktail into their veins in search of new highs. Students were also found to use Somadril in all kinds of different mixtures, but only on weekends and mainly to enhance sexual pleasure (Hardon, Idrus, and Hymans 2013).

How does the accumulation of knowledge by youth through trial and error differ from knowledge production in biomedicine? There are five main differences: first, biomedical experiments have pre-defined endpoints. Randomized controlled trials measure the

effects of specific chemicals on individual bodies, with the ‘double-blind’ method ensuring that both the subjects of the experiment and those administering it do not know whether the active ingredient or an inert substance is ingested. The group receiving the inert substance is called the control group (Goldstein 2012). The authors’ informants feel no need for a control group; they evaluate the efficacy of products through self-observation, before and after use.

In the youth-led experiments, the subjects further determine their own desired ‘endpoints’: the development of hard tissue and a base for breasts in the case of contraceptive steroids, feeling confident in the case of Somadril. These ‘endpoints’ emerge out of the sharing of experiential knowledge on what specific drugs can do to alter their minds and bodies. The endpoints are specific to their everyday needs and desires. The *waria* informants want to feminize their bodies; freelance sex workers need to be confident to approach clients.

The youth-led experiments differ from biomedical research in how they apprehend a drug’s adverse effects. Biomedical researchers *a priori* define adverse effects and then measure them in trials. Safety and efficacy data are submitted to regulatory agencies, which then weigh the drug’s benefits and risks for market approval. It is well known in pharmacology that unexpected side-effects can occur once the drug is used in routine medical practice. In contrast, youths in this study appeared unconcerned about side-effects before trying a drug for the first time. They simply tried it and observed what happens.

A fourth difference between how youth experiment with drugs and biomedical research pertains to how drugs are administered. Drugs in laboratory experiments are tested in isolation, in fixed dosages to allow for the standardized measurement of effects. Youths continuously ‘try out’ different dosages and forms of administration, mixing substances with drinks, foods and other drugs in their quest for better, stronger or faster effects.

Finally, in the biomedical measurement of drug effects, efficacy is situated in the drug’s active pharmaceutical content – if substance A is proven to be effective in population B, it is assumed to work identically in population C as well. In assessing the positive and negative effects of substances in their bodies, youths in this study time and again made use of the relational notion of *cocok*. A drug is *cocok* if there is a ‘fit’ between the drug and the person taking the drug. A comparable personification of efficacy can be seen in the biomedical discipline of pharmaco-genomics, which shows how drug effects vary depending on individual genetic makeup. Such knowledge, however, still has no place in standard clinical experiments on new drugs which are generally funded by pharmaceutical companies; too much diversity would limit the market for specific drugs.

This comparison of how youths in this study and biomedicine generate knowledge suggests that youth – in Makassar, and most likely in many other places – do not subject themselves to biomedical understandings of their bodies, as has been suggested by influential scholars such as Rose (2007) and Dumit (2012). They develop their own understandings of drug efficacy through practice – by trying out drugs, mixing them with food and drinks, and experimenting with dosage and administration – using the knowledge gained from these experiments in their quest to achieve their desired bodily and mental states.

This ethnographic study has shown how pharmaceutical practices emerge out of and fuel social life. Experiential knowledge is generated through joint experimentation, by sharing knowledge and pooling resources to buy drugs. In this collective process, youths

seek what works best for their individual bodies and minds – they try out and mix products until they have achieved their *cocok*.

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Conflict of interest

None

Notes

1. Fieldwork conducted in the summer of 2012 in Makassar was funded by the University of Amsterdam. In 2013 the ChemicalYouth project was awarded an advanced grant from the European Research Council. The current paper focuses on one of the core themes that emerged from the focused ethnographies – youths' experimentation with chemicals – among sex workers and transgenders, and compares this with practices in biomedicine. More detailed ethnographic accounts of Somadril use by sex workers (Hardon and Ihsan n.d.) and hormone use by *waria* (Idrus n.d.), which focus on the harmfulness of these practices, are forthcoming in the *International Journal of Drug Policy*.
2. Anthropologists (see Nichter and Vuckovic 1994; Ecks 2005) have criticized the way in which psycho-active medicines are promoted by pharmaceutical companies and prescribed by doctors as 'quick fixes' to enhance well-being among the poor. The analysis here shows that youths creatively appropriate medicines in their quest for better lives. The authors' interlocutors mix and modulate medicines to achieve the desired effects – which are not easy to achieve, and have risks attached.

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