How Your Menstrual Cycle Can Affect Your Reaction to MDMA

If you're a woman, you're more at risk from ecstasy – so why is no one talking about it?

By Hannah Ewens
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> Deaths related to MDMA are at an all-time high. In September of 2015, a report from the Office of National Statistics showed that deaths had increased from eight in 2013 to 50 in 2014. In the last few years, Boomtown Festival has seen the deaths of both Deborah Jeffery and Lisa Williamson. In June of this year, 16-year-old Sky Nicol died after taking five times the fatal level of MDMA. The same month, 22-year-old Stephanie Shevlin died after taking MDMA at The Box nightclub in Crewe. Later the same month, 17-year-old Emily Lyon died after taking MDMA at Red Bull Culture Clash at the O2.

These tragic cases are just a few of many. But no one is highlighting a blinding fact: that a large proportion of the deaths have been young British women.

The results of the 2016 Global Drugs Survey revealed that there's been a fourfold increase in British female clubbers seeking emergency medical treatment in the last three years. In addition, women are two to three times more likely to seek that treatment than men. This isn't a coincidence, so what are the reasons for this significant split? Why are women so at risk?

Adam Winstock, who runs the Global Drugs Survey, says that, for starters, women are less likely to buy the drug directly from a dealer. "It's far more likely they'll be given them by men, therefore they don't know much about the particular preparation," he explains. "They may not have done that pill before or taken that powder. It could just be their partner or a bloke at a party going, 'Here, have half a pill.' Basically, women are often trusting men with dosage. Men who are judging what they're giving a woman from their own drug-taking experience."

The fact that the British take so much more MDMA per session compared to users in other countries also puts women at higher risk. "The average ecstasy user in the UK uses more MDMA in a session than anywhere else in the world," says Adam. "And we know that the risk of seeking emergency medical treatment and having adverse effects goes up the more MDMA you use."

Our drugs are getting stronger, too. A recent report from the European Monitoring Centre for Drugs and Drug Addiction found that compared to an average of 50-80 mg of MDMA contained in pressed pills throughout the 1990s and 2000s, the current average dose in a pressed pill of ecstasy has increased to double that potency: 125 mg. Meanwhile, "super pills" are coming in from the rest of Europe – most often the Netherlands – with some containing an unthinkable 270-340 mg.

If women are more easily adversely affected by MDMA due to their biology, this increase in purity could seriously impact female drug-takers. So is that case? Are women biologically predisposed to have a worse reaction to the drug? All the research on biology and sex and MDMA points to a solid yes.

Fiona Measham, professor of criminology at Durham University, is well aware of the potential dangers of being a woman taking MDMA. "There are concerns with women's differential metabolising of MDMA combined with low body mass index," she says. "If you're a slim, slight young women, you will not be able to take as much as a big guy with a higher body mass index who's been going out clubbing for years." This, of course, makes sense when you

consider how body mass affects how much drink you can handle. But there could be more to it than that: one study found that ecstasy produced stronger responses in women than in men of the same weight.

It doesn't stop there. One of the most serious medical risks associated with ecstasy is hyponatremia, a condition that occurs when the level of sodium in your blood is too low. This salt is crucial to the functioning of the nervous system, and an imbalance within the body can be fatal. When sodium is diluted, the user becomes disorientated, may experience convulsions, go into a coma and eventually die. Worryingly, women of reproductive age are actually at greater risk because of their high levels of the hormone oestrogen. Oestrogen plays a significant role in the transfer of water across cell membranes, exacerbating the the effects of hyponatremia.

Almost 90 percent of cases of ecstasy-induced hyponatraemia reported to the California Poison Control System over a five-year span involved women. When scientists tested the blood concentration of ravers at Awakenings Festival in the Netherlands in 2013, they found that 27.3 percent of the women they tested had blood so diluted that they had mild hyponatremia, compared to just three percent of the men. The scientists concluded that this is likely down to where women were at in their menstrual cycle when they took the drugs.

Last year, scientists published the results of a study where they gave MDMA to male rats, female rats, and male and female rats that had had their testicles and ovaries removed. They found the drug had the strongest effect on female rats with an intact reproductive system, stating that, "The increased sensitivity of the females can be explained by an increased reactivity of the serotonin system due to the effect of ovarian hormones."

Research has also shown that the effects of other stimulants, like cocaine, vary in women because of changes in the levels of female hormones during the menstrual cycle. For example, you could be more sensitive to amphetamines just before ovulation. So not only do women react differently to some drugs than men, they might also react differently depending on whether they're premenstrual or not.

It goes far beyond just physical response. The psychological effects of MDMA appear to be experienced much more strongly by women. In 2001, Matthias Liechti revealed that women are more likely to have anxiety and a generally more intense experience while on the drug. In 2002, scientist Suzanne Verheyden found that women experience higher levels of depression mid-week after taking MDMA.

"Our most recent data shows that women are much more likely to face hallucination and mood problems, and that around half of all women admitted to A&E weren't back to normal after two whole weeks," says Adam. "This isn't just women being paranoid – we need to drill down more into why biology is important in terms of mediating those effects."

Problem is, we don't know much about the effects of MDMA on women because drugs are rarely studied. "It's so difficult to get funding for research on illegal drugs," says Measham. "If you talk to the government, their line would be, 'It's illegal – of course it's going to be dangerous, so don't do it.' People are more likely to want to fund cancer research than something for people who are self-indulgently taking illegal drugs."

Frustratingly, when it comes to what we do have, women are largely left out of the studies. According to David Erritzøe, a medical doctor and post-doctoral researcher from Imperial College London, women are often skipped out of molecular imaging drugs studies – the only way to access neurotransmitter systems in the living human brain – for two grounds. Firstly, in case they're pregnant because of the low risk to a developing human, and secondly, because of their periods. "If you want to look at women, you need to include extra people so you can figure out what is caused by where they are in their menstrual cycle. It means often studies just look at men," he told Broadly. The very reason women should be studied means they're neglected. This is just one small part of a much wider issue of a lack of understanding and research into women's health.

This information needs to be out there because young British women are dying. There's no mention of sexual differentiation on Talk to Frank's MDMA page. Dancesafe has a section on women but doesn't mention anything about dosage for women. In fact, you really have to hunt through scientific publications to find this information on the web at all.

Anne-Marie Cockburn lost her 15-year-old daughter Martha after she took half a gram – at least twice the safe amount – of MDMA in her bedroom. Since then, she's been campaigning for drugs to be taken out of the hands of criminals and to be passed to medical professionals. "After Martha died, I found out she'd been looking on Google for ways to do it safely," she said. "And that's why I said, 'She wanted to get high, but she didn't want to die.'" Unfortunately, the information she found wasn't sufficient. If she read about dosages, any guidelines would have been too much for a young girl under seven stone anyway.

Danny Kushlick of Transform, a think-tank campaigning for an end to the drug war, is of a similar mindset to Anne-Marie. "The government needs to know that when you prohibit something, you're operating blind," he says. "It creates massive dangers that wouldn't exist otherwise. None of this information is delivered by the Department of Health, but it bloody ought to be."

In absence of research on how women react at various stages of their menstrual cycle, he advises that female drug-takers should go slow initially, especially if it's their first time. "Take a low dose, see how you react. If you're a regular user, keep tabs on how MDMA affects you throughout your cycle," he says. In addition, look out for each other and share this information as widely as you can. If it's not coming from above, then it has to come from the ground up.

Adam's advice is sensible and almost impossible to forget: "Men, don't be daft, take a half. Women, don't get slaughtered, have a quarter."

"It's not about being for or against drugs," says Anne-Marie. "It's about being *for* life. I want people to not die of curiosity. Future generations are going to look back and shake their heads at us."