Episode 71: GHB - Patterns of Use, Harms and User Experience (Part 1)

Transcript

Hi everyone, welcome back to the Tox Lab. I'm Rebecca. I'm Rob. This week we're going to be taking a look at a compound that has been used to treat narcolepsy.

It's been used by body builders to help them recover. It's used by people for pleasure and if you take it it disappears from your system within hours and yet if you die it comes back. This week we are looking of course at GHB and we've had a few requests from people to talk about this drug and I must admit there's quite a lot to unpack isn't there? Yeah.

There's definitely going to be a lot to look at. So we're going to be taking a look at what it is, what it does, who uses it, why they use it. Then we're going to take a bit of a look at the forensics side and some of the challenges that come from trying to test for this compound. Before we dive into today's episode if you want to stay up to date with our content you can find us on Instagram at @the_tox_lab.

We also have a page on LinkedIn and we're fairly active on there and for those of you who don't use social media but still want to get in touch with episode suggestions or comments about our episodes you can email us at thetoxlab@gmail.com and before we really dig into the content of today's episode we will be talking about suicide, we'll also be talking about drug-facilitated crime and drug-facilitated sexual assault so if that's something you really don't want to be listening to right now please click off this episode and go listen to some of our other content. And so what is GHB?

Well GHB stands for gamma hydroxybutyrate and it's a compound that really started life as an experimental anesthetic. In the 1960s a French researcher Henri Labrie, I may have butchered that name, synthesized GHB while studying the neurotransmitter GABA. So the neurotransmitter GABA is really quite polar, it doesn't cross the blood brain barrier very well and so the theory was what if he modified that compound with a little tweak to make it cross the blood brain barrier a bit more easily and that was what he did and that really was what happened. GHB is a very small molecule and it interacts with the brain in a very similar way to GABA.

And so it was originally explored as a possible anesthetic, it was used as a sedative and it was also used as a possible treatment for sleep disorders. And when they looked into this compound it produced a deep sedation, it produced this sort of calm unconsciousness was what was described and initially they actually thought it didn't have very much respiratory depression but problems emerged, it had an unpredictable depth of sedation and also people started having seizures, vomiting and the dose between a sedative effect and dangerous sedation and coma was really quite small.

And weirdly it re-emerged again in the 80s and 90s as a bodybuilding supplement, it had a side effect of really boosting growth hormone and really helping people sleep really well after heavy exercise. And so it was sold as a fat loss aid to help people who were weightlifting. In the 80s and 90s we started to see case reports of dependence and withdrawal syndromes and then later in the 90s it became embedded in club culture, it became known as G or liquid ecstasy. And people would take it for euphoria, disinhibition and also they'd use it for sleep after stimulants.

A few episodes ago we were talking about qualiudes weren't we and how people would take it in the disco scene as a way of coming down, completely unrelated compound but the culture was very much similar. People were using it to relax after a night of stimulants but rather like qualiudes another drawback and downside was seen and that was where it started arising in drug facilitated assault. So what is it? I've touched on it briefly, it's essentially a short chain fatty acid and what is remarkable about GHB is not only is it a drug but it's also produced endogenously within the body.

It's actually a breakdown product of GABA itself and it is present in the brain tissue and in body fluids. So very briefly how does it work? Well it's actually got its own unique receptor the GHB receptor and this has only been discovered relatively recently and so at lower doses it seems to work on this receptor then it leads to actually a stimulant effect and a dopamine modulation effect but at higher doses it acts similar to alcohol or benzodiazepines on the GABA B receptor and this leads to CNS depression, sedation, respiratory depression, coma and ultimately potentially death.

So we're going to look at a couple of papers aren't we looking at some qualitative research first of all looking at its use and its harms and where GHB is used and why people tend to use it. The aim of this first paper was to describe and triangulate trends from a range of national data sources to describe GHB use and associated harms in Australia from 2013 to 2023 and they wanted to determine trends specifically in GHB use among the general Australian population and two samples of people who regularly use drugs and GHB related to harms and treatment episodes where GHB was the main concern.

So they used a variety of data sources from the drug trends national illicit drug monitoring program and extracted annual national data specific to GHB and this data included the NDSHS household survey, the EDRS data which involves annual interviews of people who regularly use MDMA and other illicit substances, the IDRS annual interview of people who regularly inject drugs, the NHMD data which covers hospital level records from admitted patients, the NCIS database of all deaths reported to the coroner in Australia and New Zealand and the AODTS NNDS data which is a collection of alcohol and other drug treatment data.

So quite a wide range of data sources were all collated for this particular study. So in the general population lifetime use of GHB in Australia has increased between 2013 and 2023 with the percentage of people over the age of 14 having used GHB at least once increasing from 0.9 percent to 1.2 percent and use over the past 12 months had increased from 0.07 percent to 0.19 percent. Most individuals who had used GHB in the last 12 months had used less than once a month but the frequency increased between 2022 and 2023 with nearly half reporting monthly or more frequent use.

In the samples of people who used illicit stimulants between 2013 and 2017, the proportion of people reporting GHB use in the last six months increased from 5.7 percent to 7.3 percent and between 2019 and 2024 GHB use also rose from 5.4 percent to 11.5 percent. The median number of days that GHB was being used was between two and three days over the last six months and this didn't really change over time and swallowing was the main route of administration. In those who inject drugs between 2020 and 2022 less than 11 percent reported using GHB in the last six months each year.

In 2023 and 2024 however 17.5 percent and 14.8 percent of people respectively reported GHB use. The median number of days was also low over the course of the monitoring period and reported as a median of three to six days so this equated to monthly or less frequent use and swallowing was also the main route of administration.

So the general trends amongst the whole population has increased the proportion of people who use stimulants who are also using GHB has also gone up and its use amongst people who use stimulants was quite a bit higher than the general population wasn't it yeah so there is quite a bit of overlap with

people who use stimulants and also in people who inject drugs it's also increased so the general trend seems to be overall GHB use is increasing in this period yeah there was also a significant increase in GHB related hospitalizations across the period from 2012 to 2013 to 2022 to 2023 from 5.3 hospitalizations per 100,000 people to 19.1 hospitalizations per 100,000 people where GHB was the principal diagnosis for the hospitalization the rate also increased from 2 to 9.7 per 100,000 people during this time period okay so the overall prevalence small numbers but doubled the harms seems to have gone up by a factor of four yeah so possibly not only has the use increased but perhaps the context of that use or the the type of use has changed and there was also a significant increase in the rate of GHB related deaths from 2013 to 2022 from 0.02 to 0.24 deaths per 100,000 people which are greater to less than five deaths up to 52 deaths between the different time points and this is normalized by population as well so that is a tenfold increase which is very significant now i think we will possibly come on to post-mortem stats and GHB further down the line because there is a bit to unpack in terms of the data and so on there yeah so bear that in mind when we come back to that later on there was also a statistically significant increase in closed treatment episodes where GHB was identified as the principal drug of concern from 0.07 per 100,000 in 2012 to 2013 to 6 per 100,000 in 2020 to 2021 and then there was also further increase to 8.4 per 100,000 people in 2022 to 2023 where GHB was identified as a principal or additional drug of concern there was a rise from 0.3 closed treatment episodes per 100,000 people in 2012 to 2013 to 16.8 per 100,000 people in 2020 to 2021 and then a further increase to 18 per 100,000 people between 2022 and 2023 okay so first paper then really setting the scene doesn't it it's a drug of increasing prevalence it's a drug of increasing harms possibly disproportionate to its increasing prevalence and we're seeing it more and more in people undergoing treatment now one thing this paper didn't do was it didn't look at the social groups that were using this drug did it no and there is something slightly unusual about GHB because GHB has a reputation for being used mostly amongst men who have sex with men the gay bisexual community and often it's used in the context of chemsex for those who don't know what chemsex is chemsex is a term used to describe the intentional use of drugs to enhance sexual experiences and other drugs are often used alongside GHB in those contexts include drugs like methamphetamine and methadone stimulant drugs and we saw earlier didn't we that there is some overlap between stimulant use and GHB use but whilst it is recognized that GHB is sometimes used in those contexts it is also used outside this next paper actually looks at GHB use amongst those who identify as heterosexual so this paper is a qualitative study of heterosexual people who use GHB in Australia and they use semi-structured interviews that were carried out covering questions on patterns of GHB use perceptions of benefits and harms questions around harm reduction practices overdose sex and sex and consent the inclusion criteria for this study was those who've reported to consume GHB on at least three separate occasions within the last 12 months and identify as heterosexual and they were recruited through social media between April and August 2022 by approaching patients who presented to the St Vincent's hospital emergency department alcohol and drug service or psychiatric alcohol and non-prescription drug assessment unit for GHB related reasons and they also used snowball methods that individuals could invite others that they knew to participate the 26 participants completed an interview with the mean age of 29 years and 73 were female 81 were born in Australia with majority living in metropolitan areas and two participants were Aboriginal and or Torres Strait Islander people most participants first consumed GHB at the age of 22 and on average consumed GHB approximately four times a month most participants consumed GHB alongside other drugs primarily methamphetamine but alcohol is also commonly reported and 25 out of the 26 participants reported an episode of excessive GHB consumption that would meet the clinical definition of toxicity or overdose the majority also reported using GHB in sexual contexts and participants who reported occasional GHB use consumed GHB infrequently and in recreational settings such as music festivals parties with friends and often alongside alcohol this group reported experiencing minimal harms witnessed fewer overdoses and

were less aware of the risks associated with GHB they also didn't report other drug or psychosocial issues regular users or those who used frequently but not daily and had long-term experiences with GHB often took GHB alone or alongside friends or with intimate and sexual partners and is primarily used within private residences and consistently used alongside other substances such as methamphetamine this group were more aware of the risks but experienced harms including overdose violence theft and injury and several participants spoke of other issues including drug dependency previous incarceration or hospitalization due to mental health concerns for those reporting daily GHB use they reported using in a variety of contexts including public spaces workplaces and schools and they experienced a higher frequency of serious harms including overdoses in public spaces theft and physical violence GHB use was also accompanied by social psychological and physical limitations for example using multiple times a day and they also reported other drug psychiatric or legal issues so some of these themes overlapped a bit with the use in homosexual communities right the use of GHB in sexual contexts was frequently reported but also outside of that a mixture of regular and dependent use so in these interviews four wider themes emerged including escapism diverse understandings and experiences of overdose stigma and gendered harm reduction practices if we're going to break each of those themes down so first looking escapism users reported it as a way to shut down emotionally or mentally or used as a way to reduce the physical impact of other drugs such as the unpleasant or persistent after effects of methamphetamine use individuals also reported pleasurable synergistic effects when using GHB along with methamphetamine and also reported using GHB to immediate low confidence and body image issues among women reporting regular or daily GHB use it was also reported to be affordable and relatively accessible and did not come with a come down or hangover and helped people with sleep so some of these reasons overlap a bit with reasons people might use benzodiazepine drugs for example or even alcohol right yeah so moving on to diverse understanding and experiences for overdose most participants reported at least one occasion of GHB use that resulted in CNS depression including loss of consciousness with one participant reporting more than 30 experiences some individuals referred to these events as overdoses whereas others referred to them as geeing out or blowing out and there were also quite visceral descriptions from those witnessing overdoses and witnessing others dying from a GHB overdose and these were understandably very traumatic experiences the severity of overdoses reported ranged from life-threatening emergencies requiring airway clearance as result of vomiting and chest compressions to those who didn't seek medical intervention but were unconscious and difficult to rouse those who had more experience of GHB use were aware of the contributors to an overdose with one participant stating like quote a fine line between a high and chromatose state a fine line between euphoria and death and i think this is one of the real issues with GHB isn't it that the dose window is really narrow and we're talking milliliter doses yeah two to three milliliters and you go half a milliliter over that and that could be the difference between the desirable effect and the unconscious effect other factors such as body weight, inexperience with GHB, concomitant drug and alcohol use, periods without sleep and food intake were also mentioned.

Intentional overdoses were also mentioned with individuals wanting to achieve unconsciousness some of this was voluntary risk taking to negotiate the boundaries between control and chaos and is sometimes referred to as edge work others were using it to experiment with existential or emotional boundaries with one participant stating a quote i was intentionally trying to unintentionally kill myself so it's like i was not doing it to die like oh yeah i know i felt like if i died it would have been okay which also highlights the need for mental health support and suicide prevention in GHB harm reduction strategies people describe giving up or giving in and relinquishing control when on GHB and as they become more familiar with GHB they felt they could push its limits in terms of responding to overdoses mild overdoses were responded to by removing their peer from harm keeping them awake and giving them water to drink when sustained loss of consciousness was involved placing them in the

recovery position monitoring vital signs such as heart rate and breathing were mentioned others talked about blowing methamphetamine smoke or giving amphetamines to counteract an overdose and others discussed calling an ambulance but there was some fear of police involvement and fear of retribution from peers harm minimization strategies that were brought up by individuals included using syringes or precision scales to measure their doses having a base dose and an upper limit that they would not exceed and testing their GHB using reagent kits or smelling and tasting it to try and detect impurities some also described having timers for redoating and were aware of symptoms such as nausea and vomiting or sleepiness that would be a sign of them to slow down they also recognized relying on their peers to check in with each other yeah reading some of these quotes from some of these people was really quite eye-opening to me there was one particular person who was essentially describing symptoms of toxic overdose somebody losing consciousness and how within their circle that was just referred to as going for a nap it was seen as part of the use of GHB yeah was to actually take so much as to actually lose consciousness there's a few things we haven't mentioned actually you were talking about syringes and impurities and we've not actually mentioned the forms that GHB comes in and so GHB is typically dissolved in water and two different bottles of GHB could actually contain different concentrations of GHB itself but sometimes GHB is taken in the form of GBL and GBL camera buteralo lactone is actually a cyclic ester of GHB and this is sometimes used in industrial solvents and that is converted to GHB within the body and finally there's also one for butane diol which is an alcohol compound again used as an industrial chemical and that itself is also converted to GHB within the body so the same drug actually can come in multiple different forms and each of those different forms will have differences in dosing and purity moving on to stigma there was a perception among non-users that GHB was more dangerous than other drugs including methamphetamine disinhibitory effects and features of acute toxicity were unpleasant to witness for consuming peers and non-consuming bystanders and drink spiking as sexual violence also played into discussions around stigma and we'll talk a bit more about drink spiking and drug-facilitated crime in a little bit gender harm reduction practices was the last theme that was identified in this paper and women reported requiring heightened vigilance towards risk associated with sexual violence and reported only using with people they trust who wouldn't take advantage they also reported the importance of handling it dosing it and measuring yourself to prevent predatory crime and there was also a theme of women protecting each other even if they didn't know them before to protect them from violence so that is very much an intro to GHB and some of its use patterns some of its harms and some of the reasons why people might choose to use this drug i think this is um a really really interesting paper actually because i think it shows something really really important i'm certainly guilty of in the past thinking GHB was really only used in chemsex contexts between men who have sex with men and this paper clearly shows that that isn't the case that there are other people that are potentially affected by GHB and i think that's really important because there is now increasing awareness of GHB and increasing moves to targeting harm reduction practices for example towards men who have sex with men but actually it's possible that we're going to be missing some key people by focusing on those communities yeah that is a really good point if all the harm reduction strategies are targeted towards those groups that people most associate GHB use with you are going to miss a chunk of people who are using it who don't fall into those categories and they're also vulnerable groups of people who do need the support and especially not just the support to stop using GHB but also like mental health support and possibly legal support a lot of them were reporting legal issues around their GHB use there are definitely wider social harms associated with it that also need addressing yeah that's completely fair we haven't actually dived too hard onto some of the mechanisms of harm have we but as we've mentioned it can be toxic to the point where people can lose consciousness vomit block their airway ultimately it can cause respiratory arrest in and of itself but there's the other side of it actually is it can also be dependence forming and then withdrawal can be a problem withdrawal from GHB is

similar to benzodiazepine withdrawal which as we've known can be quite harmful if you don't taper your dose and as we've said the other harm can be this being taken advantage of whilst unconscious and that is a real risk so i think we're going to wrap this episode up here but we're not done with GHB we're going to come back next week to unpack some of the forensic angles if you've found this episode insightful or useful do consider sharing it we would really appreciate that thank you again for spending time listening to us hope you'll have an amazing week and see you next time bye