

The Fertility Answers Podcast

Episode 27: Marijuana and Making Babies

Hey everyone, welcome to another edition of the Fertility Answers podcast, I'm your host Dr. Neil Chappell, double board certified OBGyn and reproductive endocrinology and infertility physician working with the Fertility Answers network and I'm excited to bring to you yet another episode of our podcast outlining some of the more frequently asked questions through either conversations or distillation of the most recent literature and updates that I can bring you to give you a little bit of information that will potentially help you on your journey or to pass along to someone who has got the same questions.

Today I want to bring to you something that I'm seeing more and more and I get asked every week, probably not every day but every week, and that's marijuana use and specifically THC. This is becoming increasingly more prevalent and more common as more and more states are adopting legalization laws and medical access is increasing and recreational use is increasing. It's estimated that about 10-20% of reproductive age Americans are using marijuana in some capacity, but that number is estimated only to go up as we find more and more uses for medical marijuana, recreational delivery systems, etc. just overall use to be somewhat more acceptable. And so, we see this more and more, and more and more of our patients say I don't smoke cigarettes, I don't vape, or anything like that, but I smoke marijuana, is that a problem?

And so, I wanted to bring to you guys the most recent literature on how we think about this. To be honest, because of recent legalization, this is not something that's been extensively studied, but too many people think they know when we actually don't know. And to kind of drive that point home, I want to talk about a study that was done in Colorado in 2018 and was published in our Green Journal which is just one of the journals that publishes OBGyn literature here in America. And they did a mystery caller survey study which was really cool. They basically got a group of people to use this script saying "Hey I'm 8 weeks pregnant, I'm suffering from some morning sickness." They used that script to call 400 different marijuana dispensaries stores in Colorado after its legalization to request information about using marijuana for morning sickness while pregnant. Interestingly, 70%, so two-thirds of the stores, said absolutely, marijuana can treat morning sickness even though you are pregnant. A third even went so far as to say this is safe in pregnancy, we know it is safe in pregnancy, and a third even said you don't even need to contact your physician to ask them, we know it's safe. And of course, this is not correct. We don't know what we don't know. And we do have some evidence about the safety of marijuana in pregnancy and I'm going to tackle that here in just a second. But this is just an example to highlight the fact that people are out there spouting information, and really, I should say misinformation, about what we do and don't know about marijuana and THC. And that's obviously very dangerous.

So, let's get into the actually nitty gritty of the facts based on the research and the science that we have so far. I'm going to break it down into the male side, the female side, and then specifically pregnancy as well just to kind of circle back to that Colorado study and what we actually should be telling people as they ask about use of marijuana in pregnancy, etc.

Let's start with guys. There have been a number of both animal studies and studies in men looking at marijuana use and its effect on reproductive function. And what we see as a whole, as an aggregate, because some studies, to be honest, say there is no effect and some studies say oh, actually there is an effect. If you kind of average them all together, what you see is in most men you can see a decrease in sperm counts. You can see a decrease in the size of the testicle, and you can also see some reproductive dysfunction meaning guys can either have erectile dysfunction, difficulty maintaining an erection, or even have issues with orgasm and ejaculation.

Interestingly, a more recent study showed alterations in sperm DNA. This is a really high-level scientific kind of topic, but basically the way that the guy packages his genes into the sperm to be delivered to the baby can be changed. And that may affect how the baby subsequently is able to express those genes. Again, this is a high level genetic thing, but basically the ability to pass on your good genes and the ability to express those genes can be affected as well. And so again, not all the studies agree. Some studies say that marijuana doesn't affect anything at all and some studies say that actually it does affect reproduction function, both in sperm production and in sexual function. So, I think in the aggregate you see that marijuana may have an adverse effect. It's certainly not beneficial.

On the female side, things are even more confusing to be honest. We do know that there are THC, and I keep saying that, but THC is the active ingredient in marijuana. It has a receptor that's called the endocannabinoid receptor. There are a couple of them, they get really complicated. But the endocannabinoid receptor is present in parts of the brain that regulate the menstrual cycle called the hypothalamus and the pituitary, also there are receptors in the uterus or the womb and there's even receptors on the ovary. And so, what we see in both animal studies and in human studies is that frequent use of marijuana can disrupt the brain's ability to talk to the ovaries. It slows down the hormones in the brain, specifically GnRH, which slows down the recruitment and the growth and the ovulation of eggs. And so, you see longer cycles and more irregular cycles. This kind of translates to a 2-3-fold more likely risk of having either longer or irregular cycles. So, patients that smoke marijuana may see a 2-3 times increase risk of having irregularity in their cycle which obviously affects your ability to predict when you're ovulating and when your fertile window is.

Whether or not this impacts early pregnancy or miscarriage, it's a little inconsistent. Some say yes, some studies say no. So, we're not really sure, but we definitely see strong evidence that there is an effect on the ability of the brain and the ovary to have good communication. The receptors that are activated by the THC slow down that communication and delay good growth.

There may also be direct effects on the egg. There was one IVF study that looked at women who smoked, who have smoked marijuana for more than a year and if those folks go through IVF, they'll get a quarter less eggs with about a third worse fertilization. And those are just good surrogates, good measurements that give you an early on idea hey this affects egg quality. If you are getting less eggs, and less of them are fertilizing, then maybe that's an indication that less of the eggs have the quality they need compared to the folks who are not smoking any marijuana at all.

This is a good place to pause and say marijuana is hard to study not only because it was illegal for a long time, so it was difficult to find people that say hey, yes, I smoke marijuana, come study me. But also because if you're smoking, we know smoking is bad. Smoking cigarettes is bad. Is smoking marijuana bad because of the THC or is smoking marijuana bad because of the smoking? That's a little harder to differentiate, and so what we probably need to do in our future research is to look at the direct effects

of THC that you pick up in things like edibles and other things like that compared to the actual harmful effects that we know the act of smoking causes. So, little side note there to say, hey, some of these things are bad not necessarily because of THC but because of smoking. But what is THC versus smoking? We still don't know. So, all we can tell you is this is what we found when we looked at marijuana use.

Now on to pregnancy where things are a little bit more clear. First of all, we do know that THC both crosses the placenta and concentrates in the breast milk. And the fetus, the baby, has these cannabinoid receptors, THC receptors, as early as five weeks. Which makes sense, right, since the brain is one of the first things to develop. And so, these THC receptors show up pretty darn early. And so, we do have some evidence and some studies that THC use in pregnancy can impair cognition and disrupt behavior and development in babies that are born to moms that smoked marijuana. The placenta has cannabinoid receptors as well which explains why some of the studies, we looked at show that there are growth issues with babies when smoke marijuana.

Probably most alarmingly to me is the breast milk study, the lactation studies. Marijuana, the THC, is lipid soluble. That's a fancy way of saying that it can concentrate itself in fat and obviously there's a lot of fat in breast milk because it's just laden with those nutrients that babies need to grow. And whenever you have something that stores well in fat, in a fatty tissue like glands that hold the breast milk, you can really shove a whole bunch in there. In fact, we found that the amount of THC that's in breast milk is about 7 or 8 times higher than what you initially ingest yourself. And that can go into the breast milk and concentrate there and then go straight to the baby where it can store in their fat and continue to release over a long period of time.

So we don't have long-term, 5, 10, 15 or 20-year studies looking at babies that were born to moms using marijuana because again we just haven't been studying it well that long, but the short term studies that have come out have shown that there are motor delays, meaning that these babies tend to get up and walk and move and crawl and all those things slower than counterparts not affected potentially because of the effect of THC.

Also, just as a side note, one of the things that THC is notorious for doing is for dropping your level of a hormone called prolactin. Prolactin is directly responsible for increasing the volume of breast milk. So, folks that have ever tried know it's really hard to breastfeed, or it can be very hard for a lot of people to breastfeed and if you're smoking marijuana you're decreasing one of the most active and one of the most important hormones in that process. So, I would just be conscious of that and I think that would also be true for edibles as well because this is not a factor of the smoke. This is a factor of the THC's activity on the cannabinoid receptor.

So, the long story short summary as with all things in life and nature, extreme use of anything is plausibly harmful. There's really not a whole bunch of examples of extreme things in nature. Everything kind of tends to shift to a balance in the middle. Limited exposure to THC is going to be less likely to have drastic effects on the reproductive system than extreme use like constant daily use or something like that. And this is probably why our studies are conflicting because it's probably someone that's had an edible or two once a quarter is different from someone who's smoking daily. And so, some studies looking at folks that aren't really using it that much or are using a minimum amount are not finding any differences with the outcomes. And studies that are looking at folks that are having daily use are picking up the folks that have longer, more heavy laden, more chronic exposures and they are seeing evidence of potential harm.

I think THC has its medical uses, its medicinal uses, and it has its place in our society but you have to be cautious and aware that there aren't really any benefits in reproduction and there aren't any really benefits in pregnancy that justifies the potential risks that have been found in both animal and human studies. Particularly in the realm of pregnancy and lactation, there really do seem to be biologic evidence of harm here. And, with few exceptions, it's probably best to avoid because there really aren't as many benefits in pregnancy and lactation compared to these harms. Any potential benefits you may get from nausea or other pregnancy symptoms in this instance appear to be outweighed by the risks posed to the baby.

But as with everything in medicine, there are individuals who have different considerations that need to be taken into account. So, I would, unlike 30% of these Colorado stores that we talked about at the top of the podcast, I would recommend talking to your provider about your story and your individual and specific risks and benefits when you are looking at something like THC or smoking or anything like that. These things do have risks, do have side effects, may have harm and may make it more difficult not only to get pregnant but to stay pregnant and to have what we all want at the end of the day: a healthy live birth.

So, thanks for tuning into our latest edition of the Fertility Answers podcast. It's been my pleasure bringing these episodes to you these past couple of years. Again, if you have any questions, comments, thoughts or want me to dive deeper into a specific topic please feel free to email me at podcast@fertilityanswers.com. But until the next time, I hope you guys have a great new year in 2023.