

Living PCOS Free – Ref 271

Steven Bruce

Good evening once again, welcome to another 90 minutes. So great CPD. I'm completing my set this evening by finally getting the last of the Jayco family into the studio. Previously, as you probably know, we've had orthopaedic consultant Rajiv, we've had his wife, Nitu, who is an optimum Gynae consultants, and they both been really well received. In fact, they've appeared on the show several times. This evening, however, I've got Rohini, who like her parents is a certified medicine, lifestyle medicine practitioner, and she's also a nutritionist. And if we get that right, nutrition analyst or nutritionist, nutritionist, it's an interesting, interesting, right. We talked briefly about her book Living PCOS free when Nitu was with us last time. But Rohini is going to give us a much greater insight into the problem and how we can spot it in our own clinics, and the sort of advice that we can give as physical therapists to help our own patients Rohini it's great to have you with us. Thank you for coming up. And I'm really pleased to complete the set.

Rohini Bajekal

Thank you so much. So yeah, I think we are the only family where all three of us are actually board certified in lifestyle medicine. So

Steven Bruce

there are many in the country. I know, that took me some bloody hard exam to pass. I remember Nietzsche saying it was the hardest one she'd done. And I think Rajiv said it was it made him sweat more than his conventional medical exams when he

Rohini Bajekal

really well, I, I sat the exam two weeks after I got married, so I wrote it took the textbook on honeymoon, but I managed to do Okay, so. Right, okay. It's a little bit everyday kind of helped.

Steven Bruce

Yeah. And right. And so I mentioned living PCOS free. We didn't talk about it when Nietzsche was in before and before that show, I bought my own copy of this need to put one in and gave me a spare copy of it. I noticed you've got your own with you as well. So I thought what we do this evening is that you get to be the judge of whoever asks the most important question or interesting question, and we will send them a copy of the book. No pressure everyone, do you think it's more valuable if it's signed by the co author?

Rohini Bajekal

That quit in Notting Hill where he says, yes, you can find one that's not inside it

Steven Bruce

was brilliant. So bring it get your questions in. Somebody's going to get a copy of living PCOS free after this. And I'm really it is a very, very useful book designed not just for practitioners, but also as a book that patients can refer to as well. You don't have to stick to the chat lines. If you want to send your questions in the by the conventional way, then do but please remember that you can still ask questions live through video, if you're watching through the website, there's a button on there somewhere which you press, and it will sort that out. And then we'll get you up on the screen. And you can talk to me and Rohini live and it means you can develop your question a little bit further than if I've just got text coming through on my screen here. Anyway. So really the point of this evening, because we're not going to be Guinee experts in the osteopathy and chiropractic world and for the physiotherapist, probably not them as well. What we're really looking for is how we spot patients who might have polycystic ovary syndrome. And what we can do to either channel them in the right direction, or maybe in the first incident, give them some ideas about how they can handle the problem. Is that realistic?

Rohini Bajekal

Yes. And actually physical therapists and anyone who's seen patients and personally plays such an important role in being able to spot the symptoms of the condition. And also let people know that you know, that there's a possibility that they should get this checked out. Because we know that three and four women with PCOS are living with a condition on a wire. So that walking around not aware that all these symptoms that they're experiencing are actually connected. So yeah, it's really important.

Steven Bruce

And I guess that if typically a woman will go to her GP with a problem, she won't be going to say, I think I've got PCOS, she'll be going to say I've got this problem. What is it? Is it a problem that too many GPs are not aware of it or is that they just don't have the time in their eight minute consultations to think through every possible cause of PCOS?

Rohini Bajekal

I think it's absolutely you know, it's a huge education problem both for the wider, wider society in general or just general people. We need to know more About this condition that affects one in 10 women, it's hugely prevalent and studies show it's one in 10 women but then there are other indicators that in certain groups such as those living with excess body weight, there's living with subfertility, certain ethnic groups like South Asians, it the prevalence could be even higher, even as high potentially as one and four. So we know it's at least one in 10.

Steven Bruce

And, and all that one in 10 75%. Don't know they've got it exactly. And for those who

Rohini Bajekal

are listening to thinking, what is PCOS that we're talking about polycystic ovary syndrome, and that is the most common endocrine endocrine condition to affect women. So the most common hormonal condition, and that's really, the reason why it's so hard to diagnose is it's a constellation of symptoms. So we've got, it can really range from person to person, there

are some women with PCOS who may not have any physical symptoms at all. That's generally rare. Most women do tend to that they're going to see different people for different problems. So they might be going to see a laser hair removal specialist for the excess hair growth, and nutritionist or a dietitian for the weight aspect, because eight out of 10 women with PCOS are living with excess weight in larger bodies. So they may be going to try and lose weight and things like that. And they might be seeing a personal trainer for fitness, a dermatologist for that acne, a gynaecologist for their irregular periods. And so no one's joining the dots. And that makes it really hard to get a proper diagnosis, although there is actually a set diagnostic criteria. So yes, if you, you know, you can alert people to things and if they think, Oh, this sounds like this could be an issue, they can go to their GP and say, Could we go through, you know, the, the, the kind of the protocol to get a diagnosis. And if they're not aware, then that's why empowering yourself with the right information is so important so that you can seek that diagnosis.

Steven Bruce

Right. And the criteria that you mentioned, is that something that we can specifically be looking for, are they sufficiently simple for us to recognise isn't it doesn't rely on blood tests, or

Rohini Bajekal

it's a mixture, so I will quickly mention it because it's important. And it's not just that I've got acne in my 30s. I've definitely got PCOS, there's actually a set criteria. And it was defined in 2003 by a group of experts who met in Rotterdam, and it's called the Rotterdam criteria. So you need to have two out of at least two or three of the following criteria to be diagnosed with PCOS as an adult. Number one, you need to have irregular or absent periods. Usually women with PCOS will have longer menstrual cycles of at least 35 days or longer. And it usually varies from month to month, and some women will have very few periods or even completely missing. So if you're having less than four periods a year, that definitely needs to be checked out. And there can be other other conditions where this is an issue. For example, if someone's excessively exercising or they're pregnant, or they've got a you know, Cushing's Syndrome or various other issues, that irregular or missing periods is a hallmark, so periods are a real vital sign. Number two is clinical biochemical signs. So on a blood test, we might have things like higher testosterone levels, higher LH to FSH ratios, those sorts of things. low acid hB_g. Oh, it was. So it's, it's, I've lost it. Oh, this happens all the time binding serum, hormone binding globulin. I think it's sex hormone binding globulin hadn't been blank. But this clinic, the actual physical symptoms are the ones that osteopaths and Chiropractors and other physical therapists should look out for. And that can be signs of insulin resistance and hyperandrogenism. So you're looking for excess hair growth. So if you've got excess hair growth, 95% of those with excess facial and body hair growth will tend to have PCOS. And so that's a really common symptom, you might notice that around, you know, in areas where you may not usually have that and it might be thicker and darker, and acne that persists past teenage years. So especially kind of on the jaw line, and that really cystic acne, it's underneath the skin and you can also have an X, excess of acne on the chest and back, excess body weight. And then other symptoms that are a little that don't get talked about, much like acanthosis nigricans, where it's just kind of dark, velvety patches, and this is related to the insulin resistance. So you might see that on the neck underneath the arms sort of kind of folds, a greater prevalence of other skin conditions as well like psoriasis complaints of fatigue, as well as psychological and mood changes such as anxiety and depression, and we'll talk about that but essentially, you've got the biochemical and the clinical or physical signs. So excess hair growth and acne and scalp hair loss are the ones the signs of hyperandrogenism to look for. And then the third one is As with only can be

viewed on an ultrasound where you'll see polycystic ovaries, which sound like ovarian cysts, but actually distinct. And so you've got this kind of formation of multi, follicular multicystic follicles, or immature follicles that never quite reached maturation and they look like a pearl necklace, which sounds a lot nicer than it is. But the reason that that's not a criteria and teenagers is that it's really common to have that type of presentation and teenagers or young women. So in teenagers for diagnosed PCOS, you've got to have the first to say irregular missing periods. And you know, there's signs of hyper androgens and, and but in teenagers, you ideally want to wait a while before you actually give them a diagnosis because things like acne and things can be quite a teenager. So if there's different criteria, which we talk about in our book, we have a separate chapter on how to diagnose and

Steven Bruce

if a teenager has PCOS, is it something which during those adolescent changes that they can get rid of naturally? Or is it something that's with them, and it's only gonna be formally diagnosed probably in later years?

Rohini Bajekal

Great question. So it can actually be diagnosed and teenagers. You can't reverse PCOS. There's no cure for PCOS, but you can put it in remission, you can manage your symptoms. And that's what living PCLs really is about. It's about leading a long and healthy life, you know, being metabolically healthy. But in teenagers, there are things such as the contraceptive pill and other things that can be considered but you need to consider certain things because there could be height, potentially higher rates of mood changes, and teenagers taking the pill. These are all things that we discuss in our book, because it's all about the individual, every individual will PCs will have different symptoms, and it manifests differently. So it can be really difficult. That's why don't just assume something, oh, this person is in a smaller body. They likely don't have PCOS. We know that 20% of women with PCOS and I was one of them have lean PCOS where your BMI is in the healthy range or even being quite slim, slim. But having all of the many of the other characteristics of PCOS. So yes, it tends to start in the teenage years, then that's when it gets picked up, obviously, because you notice that there's menstrual irregularities.

Steven Bruce

They're looking for mood swings, and acne in a teenager is not gonna get you very far. Is it? Because it's so commonplace?

Rohini Bajekal

Exactly. So I think so you've got to wait a number of years before you do things like the ultrasound scan and things like that. And that shouldn't be done someone unless they're sexually active, but I think there are there are specific criteria and teenagers and obviously that excess hair growth and things can really impact quality of life at all. When you're a teenager. It can be especially debilitating.

Steven Bruce

Yes. Emily's sensitive question. I think this is the earliest you've had a question on this show that I can remember. I mean, so thank you, Emily. She says she writes in thinking that many people many women have cysts on the ovaries, but actually don't have PCOS. Will does even one cyst mean that you've got the syndrome? Or will it give you the syndrome,

Rohini Bajekal

so there's a difference between having polycystic ovaries and having polycystic ovary syndrome. And not everyone with PCOS will have polycystic ovaries. I know that sounds quite confusing. But it is distinct from a very true ovarian cysts which sometimes need operations. As I mentioned, these are immature egg follicles. And, and so you, you can't diagnose someone just because they have polycystic ovaries, they do need to meet two out of three of the criteria that just because you've got polycystic ovaries on an ultrasound doesn't mean you have that could actually be a symptom of other things like just being young, having things like hypothalamic amenorrhea, which is when your periods actually go missing, usually as a result of an A relative energy deficiency in sports. So for example, under fueling for your athletic needs, excessive exercising, eating disorders, those sorts of things.

Steven Bruce

We've run a couple of shows two or three shows, in fact about various transgender issues these days, clearly this is a problem. It only affects people with overuse

Rohini Bajekal

injuries, interestingly, a dozen. I'm glad that you asked that. And yes, of course, PCOS can affect people who are transgender or non binary, but we actually know it. It's not a disease of the ovaries. It's, it does affect how the ovaries function, but it is an endocrine disorder and they were actually going to rename it reproductive metabolic syndrome, which would have been a much better term for it. And you know, we'll come to that because it has a wide range of metabolic effects. And but they've decided that would be far too confusing. So they just leave it as it is that yeah, in terms of that, it's it can affect people of all genders. And there was a great study in that came out in 2020. wants a during the pandemic buy in from Oxford, the author was zoo, I pulled the references on the slides, I know you're going to hand them out to everyone. And it did it. It was a study of over 175,000 men, and it showed that men can also develop characteristics of PCLs as well. So things like the scalp hair loss and so I was gonna

Steven Bruce

say I asked the question, obviously knowing what the answer was going to be. And largely because Um, you're not going to see irregular periods in men and it'd be hard to Reppert to recognise hyperandrogenism in men because that's what they are. So how can they ever be diagnosed with this,

Rohini Bajekal

so they don't have kind of, they have characteristics of PCOS rather than a typical thing, but it still means that they should get checked out for things like just checking that they don't have any other metabolic issues. So scalp hair loss, central obesity, they may have a mother or a sister with PCOS. Type Two Diabetes in the family. So yeah, male pattern baldness, all of this, there's got to be checked out if you're a man. So this is relevant for everyone who's listening. So if you tuned in tonight, looking at my hairline, love, it's something that I think should be D stigmatised in general and that's why we try to use the term female pattern hair loss in the book because we rather than saying things like alopecia which is actually seen as stigmatising or using tonnes, like testosterone is a male hormone. Actually, both women and men have testosterone it's not limited to just one gender. And that makes it a lot a lot less stigmatising. Because as you can imagine, this is a difficult condition to live with.

Steven Bruce

I can and I'm sure you're gonna run through your story shortly, I think that it would be interesting to hear exactly how it affects your life, as opposed to just running through characteristics of the hormone changes and things like that. You've run through an awful lot of different factors so far involved in diagnosis or categorization of this. And perhaps I want to reassure people that we have got a whole batch of slides that we're going to share as a handout tomorrow when we send out our usual email, so they don't need to remember everything will only bring up the slides where we've got images which are useful to illustrate something at this stage. But they're not You're not expected to remember everything Rahimi says verbatim. We'll scribble it all down, because we will send out a slide deck to go with this. So let me turn to a couple of other stories. questions. First of all, because I know you'd like to get on tell us about your story. attrition is our other metabolic conditions linked to PCOS.

Rohini Bajekal

Yeah, so great questions. As I mentioned, PCOS has a wide range of psych, psychological and metabolic reproductive effects. And it is linked to higher rates of type two diabetes, because we know insulin resistance is the main driver of PCOS. And that's contributing to a lot of the symptoms we already mentioned like that acne and things like that. And insulin resistance appears to be the main driver and at least kind of around 70%, sometimes even higher number of cases. And over half of all women with excess weight and PCOS will develop type two diabetes by the time they're 40, which is absolutely staggering. They've also if you've got PCOS, you've also got a two fold increase of gestational diabetes, which has diabetes and pregnancy and, and a higher risk of other issues as well as potentially cardiovascular disease, although we do need more studies there. And studies do show an altered lipid profile. So higher higher LDL cholesterol. And, and and also things like higher blood pressure, we know that in pregnancy, there can be several complications as well. And so yes, and if you're not menstruating regularly, so as I mentioned, at least, you know, for periods that you want to have a period every month, you know, that's really what we're aiming for, then we might be given a pill to bleed because you've got higher rates of endometrial cancer or womb cancer as well and PCOS. So, yeah, we've got to get that checked out. And as I mentioned, I did mention, but it's the number one cause of infertility. And that's because you're not ovulating. So obviously, if you're not ovulating, you can't get pregnant.

Steven Bruce

One of the questions that occurred to me when you when you first mentioned that there's a link with obesity, or at least people being overweight, and PCOS is which comes first and the same with diabetes and heart disease. I'm I'm a particular fan of Malcolm Kendrick and his theories and what his own theory but the theory that he subscribes to over cholesterol and cholesterol levels and heart disease. And I seem to remember from his first book, he said that, yes, cholesterol was associated with heart disease, but it doesn't necessarily mean the cholesterol causes it. It happens when people have heart disease. And I wonder in this case, whether those cholesterol levels over the lipid levels that you were talking about are indicative of something going wrong. And that could be the PCOS or it could be cardiovascular disease, disease in its early stages. But do we know which one causes the other? Well,

Rohini Bajekal

there's that there seems to be metabolic dysfunction and PCOS, high rates of metabolic syndrome and as you mentioned with with obesity, and you know, rates in and PCOS do seem to be slightly higher than in the general population, but we also know that depending

on where you look, but it tends to be around seven out of 10 in the UK population would have overweight or obesity. So it is there is a high prevalence of that. But it's a it's a complex interplay, because we know PCOS is a complex genetic trait, but it seems to be harder for women with PCOS, though to lose weight and even maintain their current weight. We even know women with Lean PCOS tend to actually eat less and then age match controls. So it seems to be harder. And that could be to do with the insulin resistance. And that's, that really affects obviously satiety and appetite. And androgens also have an appetite stimulating effect. And that can lead to issues such as binge eating, we know that binge eating disorder is particularly hot in PCs, it's actually the most common eating disorder, but hardly anyone talks about it, because again, it affects people with excess body weight a lot of the time and that hold, go away and lose weight. So it's this vicious cycle. And that's why my approach is very much focusing on how we can empower people with education, and encourage them to follow a sustainable and healthy lifestyle for the long term. And not just the short term sort of lose weight at all costs

Steven Bruce

will probably I imagine we'll touch on that here. But there's probably a whole show's worth of discussion to be had on the science of losing weight isn't there because the conventional approach is well eat fewer calories and do more exercise. So you make people hungry by doing more exercise and then tell them to stop eating. It's bound to fail at some point. Yeah. More a couple more questions. Several from Simon, let's do metres. First, Nitu says women with autoimmune conditions, are they at a higher risk of getting PCOS?

Rohini Bajekal

Oh, fabulous question. So that PCOS does appear to have some autoimmune component or they're a little complex. And we know that women with PCOS do have a higher risk of thyroid dysfunction as an example so Hashimotos, as well as subclinical hyperthyroidism and potentially other autoimmune conditions as well. So things like psoriasis. And but it's, it's it's not that if you've got PCOS, you're definitely going to get other autoimmune conditions that as you know, with autoimmune once you've got one auto immune condition, you're more likely to develop others. And interestingly, there's a lot of questions that I get about celiac disease, which is an autoimmune condition doesn't appear that people with PCOS have a higher risk of celiac disease. But yes, that is an autoimmune component of PCOS for sure.

Steven Bruce

Now, Simon Says he's noticed that in his patients with PCOS, they have more lumbar spinal issues. Could this be connected to the irregular swelling of the womb stretching the uterine ligaments with heavy periods when they eventually arrive? Sorry for his ignorance. And he also says, Is there a link between PCOS and endometriosis?

Rohini Bajekal

Oh, you don't have to be so ignorant. I'm very happy that you're here and asking great questions. And there isn't a link between PCOS and endometriosis. Endometriosis also affects about one in 10 women, and is a really complex, painful condition, which one of the hallmarks is these painful and heavy periods? Although not all women with endometriosis have that? Interestingly, pain is not a feature of PCOS. So someone was he says, do have painful periods and report that but it's not actually documented in terms of we don't have the studies to show that and it's not a recognised feature of PCOS. And it's and in terms of what you mentioned about the lumbar spine mount remodels an orthopaedic surgeon, I what I would, I wouldn't, I can't I don't want to say I know something if I don't. But what we do know is that when we PCOS do tend to have again, higher, higher markers of inflammation, higher

levels of and more accelerated levels of things like osteo arthritis. So I assume that that is potentially that is something to do with that excess inflammation that which we can change to an extent through our diet and lifestyle. But I don't know specifically about the effect on the Mr.

Steven Bruce

Treatment. We we should have heard Rajiv and knee to and you all here together? And he can answer that question. And

Rohini Bajekal

oh, yeah, well, I educated my father about this law. study about the osteoarthritis and I said, You've got to tell your patients with PCOS, you know, it has, you know, this holistic approach is so important. And when you're seeing someone who does have had these issues, it's about also Yeah, reducing that whole body inflammation. That's, that's so prevalent and PCOS.

Steven Bruce

Yeah, and I think, you know, you're you're singing to the choir as it were. That's the right expression when you talk about holistic approach, because I think that's the approach that most osteopaths and chiropractors certainly wants to take and try to take. It isn't just about sort of addressing the one symptom and we would argue that too many GPS will just give you a pill for that problem. We might even argue that the poor physios who work in the NHS, they aren't allowed to take that holistic approach. And they end up giving you the standard set of exercises for that little problem. And none of it actually addresses the whole spectrum of what's going on in the patient. Tell us about your your journey through PCOS or with PCOS, PCOS.

Rohini Bajekal

Yeah, so as you'll see in the pictures, you know, with with my own journey with PCOS, and it really started when I was at university so I was actually doing my first degree it was at Oxford University and that was a period of intense pressure and stress in my life. I actually been okay when I was a teenager. I did suffer with heavy periods. I start to take the pill and for those reasons and to manage it, and I We'll take it back to back. So I didn't have regular bleeds and things.

Steven Bruce

stop you there. Yeah. Because I'm going to ask you a question as as your osteopath. Yeah. If if I were treating a, let's say a teenage girl. I would as delicately as I could bearing in mind, it might be an embarrassing subject for a young young woman asked about periods. Is the average young girl going to know that she has heavier periods than is normal? Or is this you know, because for some people, it's something they keep very quiet and keep to themselves? Isn't it?

Rohini Bajekal

Absolutely is such a great question. And actually,

Steven Bruce

I get the book Oh,

Rohini Bajekal

all health professionals should be asking about periods. It's, it was actually the American College of Obstetricians and Gynaecologists that said, you know, periods are the fifth vital sign and we need to be asking about it. If you go in, you couldn't be missing that someone's pregnant or that then they've lost their period or any of these things. And that's why education about PCOS and about periods in general, that's what the whole first bit of our book is about. It's just about periods as a vital sign and actually understanding your cycle. What is the healthy menstrual cycle most women don't actually know, and don't even know how to track the cycle. So it starts with tracking a cycle from an early age. It can just be as simple as writing it down in your diary. But, you know, most teenage girls sure they may not know in terms of pain. Unfortunately, many women do have painful periods, and they struggle with painful periods. We know that so many days of work are lost due to painful periods. And I think

Steven Bruce

pain is not a factor.

Rohini Bajekal

But you can still have periods. As I mentioned, you could have PCOS and endometriosis. Or you could have PCOS and painful periods, many women do get menstrual cramps and Spain just introduced menstrual leave for the first time. And you know, it can be debilitating. And it can really interfere with homework with quality of life and all of these things. And sometimes things like ibuprofen and things are not not enough. So there are there are other medications. And you mentioned before about taking a pill and look, I totally agree. The first line of treatment and PCOS is lifestyle management that is actually defined in the national and international guidelines. It's not woowoo out there to say lifestyle is the first line the future is in the nice guideline it is and so you want to have you know diet and, and lifestyle changes. However, that often doesn't get translated in actual care because of lack of time and like maybe lack of knowledge the telling people to go away and lose weight come back when they want to have the baby just doesn't cut it. But I also think there shouldn't be medication shaming, I think that some people will be able to manage their PCL asking using diet and lifestyle and other women will need extra interventions maybe met a woman because of the insulin resistance or assisted fertility treatment. And I think that's why just trying to understand the individual patient and where they're at. But I certainly found when I was a teenager, my menstrual cramps were interfering with my homework, and I was, you know, a very studious person I wanted to achieve so I really would need to get through my exams, but I was generally fit and healthy really well. And I attribute that to my parents moving cooking. You know, I grew up essentially eating a very healthy South Asian diet. And lots of things like oats and fruit and vegetables and pulses. And you know, I was active walk the dog and I never had any issues. That was when I

Steven Bruce

had kind of heard that you had an obstacle any consultant as a mother as well,

Rohini Bajekal

I did. I did. Although I have to say I wish I listened to her. It doesn't everyone always wish they listened to that. Listen to their mom, their mom is always right. But it took me many years before I actually had my official diagnosis because it was when I was at university doing my final exams at Oxford. That's when I really started to get these rather horrific symptoms, as you see in the picture that you know, with the cystic acne that covered my entire face and was incredibly painful. It was sort of under the skin should

Steven Bruce

bring up, we should bring that picture up just so

Rohini Bajekal

we can see. And I would get scalp hair loss. It's normal to lose about 100 hairs a day I was losing chunks of hair from my head. And I had severe anxiety. So we know mood changes are more common in PCOS. In fact, there was a study showing that women with PCOS are seven times more likely to take their own life. It's a very serious condition, obsessive compulsive disorder, anxiety and depression are all really common. And I was suffering with severe anxiety. A lot of it was to do with the symptoms. And I noticed all of this coming up. And I was also dealing with the excess hair growth and everything. And these were things not even my best friends knew about I had to completely hidden because when you're 19 and you're going through this, you're kind of like this is how is this happening? My body's broken. And my mother did point out when I was you know, finishing up at university that it looks like it may be PCOS, but I thought PCOS only affects people who had excess weight. And I thought that doesn't apply to me. You know, I obviously didn't want to listen to us. It took me 10 years to get a diagnosis after that because I just really put it out of my mind and I kind of soldiered on but I had a real issue To every time my lifestyle took a hit for the worse, so I was really stressed at work or I was perhaps drinking too much alcohol, my symptoms would flare up and even taking the contraceptive pill didn't really manage to make these symptoms go away. I wasn't really able to get a handle on it every time I tried to come off the pill and manage it through diet and lifestyle, or manage whatever my what I didn't know it was PCOS, but I knew that it wasn't normal as such, and I couldn't cope because I would see the spots flare up and I would feel horrified because yeah, we live in a society where women have to, to adhere to unrealistic beauty standards, you're expected to be as smooth as a dolphin. And you know, have hair that's head full of hair and no hair anywhere else. It's just, it can be really debilitating.

Steven Bruce

This your acne here is not just jawline is it that's

Rohini Bajekal

all over. And it was very that I did have a lot constitutional, my jawline and my chin. And I was I saw a dermatologist. I went to see a naturopath. Well, this

Steven Bruce

was going to be my question. And you must have gone first imagined to see your GP who said what do you have some tetracycline? Awesome?

Rohini Bajekal

Exactly. So I was put on antibiotics three times that did nothing. So obviously, with hormone related acne is only going to help to an extent if not, I'm actually going to treat the root issues. And I tried to do various things, I eliminated different food groups, and I was trying to experiment myself and nothing really was able to stick because I didn't really know much about nutrition. And when you know, any evidence for how I could manage this myself, I would try and hit the gym, that would that would help to an extent then I'd give that up then I tried a juice cleanse that wouldn't work. So it was this vicious cycle of trying everything I could and seeing different health care professionals. As I mentioned, the naturopath, the GPS, dermatologists, and it was only in my mid 20s When I had this incredible opportunity to move to India and actually forge a new career in the nutrition space. I was actually working still on the marketing side, I had totally different change of career. And when I got that my

lifestyle pretty much changed overnight. I'm not suggesting everyone with PCOS moves to India, but it opened my eyes to the power of lifestyle and the impact of what we put on our plate and what we put in our mouth three times a day, you know, I suddenly had gone from eating a diet that I thought was healthy, but it was actually rich and ultra processed foods. Remember that 66% of the British diet is made up of ultra processed foods. So these are food like substances, they're not really real food. I was eating things like protein bars, and you know, breakfast cereals and all the usual kinds of things. Maybe with some fruit here and there. But I was also scared fruit I thought it had too much sugar. Little did I know. And when I moved to Mumbai, i i started to eat. Essentially what was the local diet obviously stay away from the samosas and all of that stuff. But I was eating fruit vegetables, whole grains like brown rice, lots of pulses, like dal, and some nuts and seeds and I felt a different person. So even Honestly, my skin started to clear up my anxiety lifted up for the first time in my life from six flutes sleeping six hours a night and frenetic London to equally fanatic Mumbai. But a lot of things have changed. I think also the light exposure that helped me I was gonna say that would have been one possible thing we know that women, women with PCOS do have circadian rhythm dysfunction. And so the winter months do even for me now I find that the winter months can be especially hard and I've got to get out there first thing in the morning, expose my eye to natural light that helps with the sleep wake cycle. So I started to sleep eight hours a night, I just had energy for the first time ever I had more energy then I had in my you know, when I was 1819 and I couldn't really figure out what it was. And that started this incredible journey of kind of really starting to love myself feel comfortable and at home in my own body. I met my husband out there and it changed the course of my life I realised that I had to go and become a nutritionist and I wanted to go and help other people to feel this.

Steven Bruce

So the journey is from you drinking alcohol eating eating crap food, having PCOS symptoms to now having a dog

Rohini Bajekal

to having a dog. Yeah, exactly. And I was actually that's the healthy I don't really like showing before and after pictures too much because obviously I actually think a lot of what we know just from looking at someone Yes, you can get a lot of signs and indicators of what what might be going on but it doesn't tell you everything doesn't tell you the whole picture. And actually when I was fit and healthy and I thought that I was doing really well it's actually when I got diagnosed with pre diabetes when I was actually a nutrition student so I had started to include a lot of eggs in my diet and

Steven Bruce

you're not the typical shape or you for someone pre diabetic no

Rohini Bajekal

and i That's why I would always say to any physical therapist is don't just discount someone based on their weight. Don't think that someone who's got excess weight every all their symptoms are to do with that excess weight and don't think someone who's thin doesn't have health issues especially south Asians. We know that these issues start more aggressively at a younger age and my father had type two diabetes. I'm sure he told you all about how he managed to put that in remission. But yes, absolutely. You know, it was only when I personally adopted a whole food plant based diet, which was really getting rid of ultra processed foods. And for me animal foods that I actually saw my HBO wants to come down to normal levels and I was able to get control of that. Now my approach is not terribly one to go 100% whole food plant based eating just plants, but you can thrive eating those and what

we know from looking at the research on PCOS, the more plants you include the better so trying to add in a diversity of plants, only one in 10 UK adults meets the fibre recommendation of just 30 grammes a day one in 10. I mean, that is staggeringly low.

Steven Bruce

Chronically coding turns coming up quite a lot in this Congress. Yeah. Oh, you

Rohini Bajekal

want to tell us a bit of a pattern. But yeah, so I want to put another spin on it about we're only meeting 60% of the fibre recommendation a day. So we're getting about 1718 grammes when we should be getting 30 grammes.

Steven Bruce

Now there's there is a danger isn't there as there is with all of us saying that I did something and it fixed me therefore, it must be what fixes everybody else. Absolutely. That's

Rohini Bajekal

what I can. That's why our book once I have my story in it, the book is based on science, we have over 500 scientific references in it. And that's why it's important to go with guidelines and actually look, and as I mentioned already, it's no no one size fits all. However, a diet that's rich and anti inflammatory plants weren't only just helped with the kind of the short term symptoms of PCOS, like the acne and excess hair growth and those things from the lifestyle side, but also the longer term metabolic effects, you need to have a dietary pattern that is sustainable, that's joyful, and most importantly, combats that inflammation in PCLs. And it's also just a quick fix.

Steven Bruce

You've been a nutritionist for how long now? About

Rohini Bajekal

About five years, right? So

Steven Bruce

in that time, you've seen a lot of people take your advice, and hopefully they take it rather than just listen to it and then go away and carry on doing as they already wanted to do. So you will have seen the effect of this on your own patients, as well as in the research papers that you've you've already mentioned. And there's quite a few of those which are cited at the end of the handout that we'll send out to people as well as on the exam. There's there's lots of good, hard evidence behind what you're saying this evening. And and only I emphasise that because there is always that tendency to think, oh, there's someone coming in because they've got a bee in their bonnet about eating green leafy vegetables or whatever it might be. And it's it's good to know that there is science behind it,

Rohini Bajekal

it's really important that any reason I share my own personal story, because it's obviously just n equals one is that as health professionals, the more we share our own stories, the more vulnerable we are, the more we connect to others. And even with each other, the more we destigmatize these conditions, and also our patients, and the people in front of us realise we're also human, we didn't have it all figured out. We're still on our own journey, figuring things out. And that's really important. And health professionals can also struggle

with PCOS and other symptoms, other situations like that. It's not that, you know, it only affects a certain group of people.

Steven Bruce

I'll probably forget to do this. So hopefully, you'll remind me we should come back to the whole communication thing in the business of stigma before we close this evening. Lucy says Is there a particular time or way to measure testosterone as hormone levels do fluctuate so much.

Rohini Bajekal

So I'm not an expert on this and I don't want to cut straight off. I'm not a medical doctor. That's important go and see a gynaecologist because there are a variety of things that you want to measure. I already mentioned sex hormone binding globulin that tends to be low and PCOS and we know that plant based ways of eating can actually help raise SHBG with testosterone. I don't think there's a particular time of day, but I always usually recommend hormone test first things in the first thing in the morning, especially because you're usually doing other things at the same time, like fasting glucose, by road tests, and so on fasting in the morning. I wonder

Steven Bruce

actually, if we might not have covered that when when I spoke to your mother and you too. So it may be that people would go back and look at the broadcast, we

Rohini Bajekal

actually have a list of tasks to get done and how to get that you know how to ask for that. But your primary care provider, your GP and things that hopefully be able to run that. Lucy is

Steven Bruce

also something it's a very personal question, can you get can PCOS start at any stage in life, or does it always start as a teenager? You've always got to

Rohini Bajekal

ask as a teenager, but it usually starts in teenage years. It's a disorder that affects reproductive age women. However, it can also have implications for the menopause. We know that women with PCOS tend to have a delayed menopause two years, and they tend to still to have exhibit certain symptoms in the menopause at a higher level. So excess hair growth and things like that. But it's really interesting that PCOS appears to delay menopause by a couple of years.

Steven Bruce

Vlad says it seems that dietary recommendations are to go plant based both for general health and for PCOS. What about people who can't go whole foods plant based because they can't eat grow? Beans, beans, pulses and have to eat meat products for protein.

Rohini Bajekal

Well, that's why I absolutely agree that it's no one size fits all. And there's no one diet for PCOS. However, a diet and that's but unfortunately that's what while the guidelines say that you know we need to have a diet that helps us optimise these parameters. And they express an emphasis on whole grains, pulses, fruit, vegetables, nuts and seeds that ascribe prescribe a specific label. And so if you can't have certain foods or you've got multiple food intolerances or allergies, then absolutely but there should still be an emphasis on including a

diversity of plants in your diet. Rather than following something like a ketogenic diet. I really never come across anyone in my own practice is allergic to grains, beans, all of these things. And if that are if that is someone who's got lots of multiplatinum kind of overlapping allergies, then the best thing they can do and see a registered dietician who can prescribe them a meal plan, but I do work with clients, for example, who have allergies to nuts, or they cannot eat gluten, and they can still eat such variety of foods. So for example, if they're cutting out gluten, which obviously eliminates a lot of the some of the biggest contributions of fibre to our diet, like whole wheat bread and pasta and things like that, I encourage them to include clewd, intact, unprocessed gluten free grains like millet, buckwheat, brown rice, quinoa, those sorts of grains in abundance. That yeah, there's no reason usually and often with food intolerances, people think that they can't eat certain foods, it's often to do with the gut dysbiosis. And once they start gradually increasing fibre, they end up being able to eat the foods that they previously found they weren't able to, and it gave them the discomfort. There's a big difference between intolerances and allergies.

Steven Bruce

Risk of embarrassing myself here, but I suspect I'm not the only person who struggles with understanding the dividing line between a nutritionist and a dietitian.

Rohini Bajekal

So dietitian, they do have more years of training. So it's a it's a protector time. So registered dietitians. It's a Yeah, it's a protected term. And they, they tend to work in clinical settings so often in the NHS or in hospitals. And they generally prescribe dietary diet plans and things for specific issues. So for example, if someone's had major surgery, or someone has an eating disorder, and as an inpatient care or need has type two diabetes, and they need to know how many grammes of carbohydrates to have, with that there are more and more dieticians who are being getting more interested in the preventative aspects of using diet and lifestyle modifications. And there are more and more dietitians who are open to that holistic way of treatment. However, it's not something that is often Yeah, taught. And whereas nutritionist can really vary. I have a Master's of Science in nutrition and food science. And I think it's also really important to ask people what their qualifications, I totally think that's clear, because you can call yourself in nutritionist and have a three hours, three hour course on the internet. So it's really key to ask them what their qualifications are.

Steven Bruce

Callie says, Are there any links to taking the pill as a contraceptive earlier in their life that makes people more at risk of developing PCOS? No, absolutely

Rohini Bajekal

not. In fact, the pill is an excellent management, therapy for PCOS, it can actually help reduce endometrial carcinoma, as well as the distressing impact of PCOS on the skin and hair. If you're walking around with the kind of acne that I was having and the hair loss, it can be really, really distressing impact overall social functioning and quality of life hugely. And we know that sexual and relationship dysfunction is really high and PCLs. So yeah, absolutely. You know, with with the pill, it's a really safe and proven form of treatment. We have a whole chapter about pill myth busting in our book, but there's no link to show that that increases the prevalence. If you see.

Steven Bruce

Mickey says how much is improvement in diet with PCOS also due to one's genetic inheritance?

Rohini Bajekal

Well, I'm not really sure exactly what that question was. I think that's to do with every single person respond differently to diet and lifestyle modifications. And as I mentioned, diet is the cornerstone, but it's not the only thing. You also need to be managing your stress moving your body regularly, spending time with loved ones and your community. No avoiding excess alcohol and smoking, or getting enough sleep. There are five other pillars besides diet when it comes to lifestyle medicine. So it will vary past present. That's why I preface everything I said by saying we need to be evidence based lifestyle medicine is about following evidence based

Steven Bruce

approaches. What do you do to manage stress? What do you advise to manage stress?

Rohini Bajekal

So everyone manages stress differently? If I told you, Stephen, go off and do some yoga, you might say, that's really going to stress me out. I didn't want to lie still and get into the downward dog. But you might say to me, You know what, I really enjoys playing golf that really is going to relax me and it's really going to help me do stress so ever Everyone has a different thing that helps them do stress that are proven things that help and you know, osteopath and physical therapists will definitely know that notice perhaps a highest sympathetic response in people with heights, sympathetic tone and people with PCOS. So, we know that there tends to be cortisol dysregulation, and people with PCOS, they often find that have higher lows, often, markers, like higher blood pressure, excess body weight, all of these sorts of things. And generally running on adrenaline, that's like one of them. It's it's hard to kind of narrow it down. But it's, it's, it's getting anxious easily it's, and there's good kinds of stress, but stuff I felt before the lights went on here. But then there's the bad types of chronic stress that we want to manage. And I do recommend those things to my patients, I recommend something as little as 10 minutes meditation or mindfulness a day, first thing in the morning, and if they've got little kids, sometimes, once the day started, there's never going to be time. So 10 minutes before the whole day kicks off. Just to kick things off, trying things like psychotherapy, yoga, and massage, any kind of physical touch Mind Body methods, we know that yoga has actually been shown to reduce symptoms of hyperandrogenism. It's quite incredible, and PCLs. So all different things, even things like counselling, volunteering, playing with your cat, or dog, all of these things can help.

Steven Bruce

I hate to admit this, but I think the Americans are way ahead of us in this Weren't they because for years, it's been a marker of sort of your status that you have a therapist, meaning a counsellor of some sort in the States, whereas over here, you've felt embarrassed to admit to that probably,

Rohini Bajekal

I think that I'm glad to see that's changing more and more now, and people are actively, you know, looking after their mental health in the same way that we approach our physical health. It's this idea that there's there's one one is more important than others. But if that doesn't work for you, it could be even just talking to a loved one a friend, because as I mentioned, these symptoms are not easy to talk about with people. And that's why the dots aren't joined. And that's why physical therapists can actually help the patient patient in front of them to perhaps recognise some of these signs or at least consider seeking help for those

because they may not be aware of themselves that there's a there's a reason why they are struggling with these issues.

Steven Bruce

Well, I think I've just lost a bit with myself, because while you were talking, I had a little bit that within 30 seconds, someone would send in a request to see me doing a downward dog, which I'm not going to do and I thought it would be Robin but a different Robin says do people with PCOS do well on a pure carnivore diet as appears to be the case with some other autoimmune conditions?

Rohini Bajekal

I think that might be the last question. That carnivore diet ebook for you and Robin diet. Oh, my goodness, goodness. Where do I start? I can literally be here all day. All the data is terrifying. Our young men dying of heart attacks on economy. You know, they're they're the only positive thing I can say about a carnivore diet is that it is eliminated Ultra processed foods which do disrupt the gut microbiome and an awful but it has a negative impact on lit every single other parameter, even Paul Saladino. Dr. Paul Saladino, as you know, he's one of the big proponents of this has included a huge amount of plant foods in his diet due to adverse lipid profile on the carnivore diet. It is an absolutely unethical and unsustainable way of eating in the midst of a climate crisis as well. So there's absolutely no recommendations for a carnivore diet. If you have an autoimmune issue. You need to be fueling your body with anti inflammatory part foods, not not foods that completely lack fibre and lots of micronutrients. No, absolutely no for me,

Steven Bruce

so not sitting on the fence with that one? No. So Joe says, Do you recommend supplementation with EPA and DHA in order to increase omega the Omega three index for reducing inflammation? Oh,

Rohini Bajekal

great question. That's a really good question. Yes. Again, you know, I have to emphasise everything that we're talking about. We need more research and PCOS we really do but we did include a study in our book showing benefits of Omega three supplementation, DHA and EPA about 500 milligrammes combined. And I recommend an algae derived supplement, particularly as you know, fish oils are not indicated in PCRs. A lot of them we know that, especially the bigger fish, there's higher amounts of bio accumulation, higher amounts of toxic heavy metals, Mercury and these sorts of issues. So going from a clean source and algae derived Omega three is one of the best things you can do. I do take one myself personally, that has that Ken has been shown to help with inflammatory acne and also with the other other signs of hyperandrogenism. And in terms of fertility, if you're trying for pregnancy, or you are pregnant or breastfeeding, then it's really important to take DHA and EPA and you can also get plant based omega threes which is the alpha linoleic acid and we do convert some of that to DHA and EPA, how good you are at converting that varies from person to person. And it also depends on the ratio of omega six in your diet as well. But some really good sources that I recommend. Everyone includes things like ground flaxseed, which is a really budget friendly source. I have one to two tablespoons a day. And that gives you a really good man amount of alpha and linoleic acid that will help with skin, hair, all of these sorts of things. And then walnuts, hemp seeds, chia seeds, these are all fantastic sources, and there are some amounts and dark leafy greens and other foods as well.

Steven Bruce

Okay, well, my wife Claire will be pleased to hear about that, because the way we live in France is covered in bloody walnuts. Oh, name all over the place. Yeah. But we have to be careful with them because the dog actually managed to find one that had rotted slightly. And actually they had, they can be seriously dangerous to animals eating them because they have a neuro neurogenic neuropathic effect on anyway. And you can't teach a Labrador not to eat things. It's just Nitu says how do you manage patients who have PCOS, but are put on steroids.

Rohini Bajekal

Because it doesn't make certain things more difficult, particularly, you know, risk of types of diabetes, and other issues and weight gain. It's really about meeting the patient where they're at. Sometimes, when I'm talking, remember that what I'm saying is where I'd like people to be I'd obviously like people to be getting 10 to 13 portions of fruit and veg a day portion being more efficient is what you can fit in the palm of your hand at grands. If you're an adult, if you're a child, it's what you can fit in the palm of a child's hand that would be a portion for a child so and that's it can be as little as for a little child, it could be like a few pieces of a Satsuma or you know, a couple of chose for an adult, it's going to be things like maybe two satsumas, or a medium size apple, or about six florets of block broccoli about that amount. So the Japanese actually get about 30 in a day, and they recommend close to that. I think the French recommend nine a day, the UK is fibre day. And we know that only 17% of teenagers get that. And about a third of adults don't get any one a day. So yeah, we're really, really fortunate for

Steven Bruce

years, I used to say five pieces of fruit or vegetable a day without defining what a piece was. It's nice to know what people

Rohini Bajekal

want you fit in the palm of your hand. And that's why I recommend, you know, with this question about steroids, it's really about meeting the patient with it. And I say this for everything. There are many patients of yours who are on a real budget. You know, we're in a recession right now, really looking at why what what can you do so I never say everyone should be eating organic, whole plant foods all the time. That's really not practical. I actually do a lot of community work I work with people on from low income households. So I actually encouraged them to use some frozen fruit and vegetables and actually frozen blueberries or had higher levels of antioxidants. Specifically, those signs which we know protective against things like Alzheimers disease and dementia, and then fresh blueberries so you don't have to feel that one is better than the other and actually using things like Tyndall canned lagoons, like chickpeas, giving them a good rinse, throwing them into dishes in it, adding adding them into a stew or soup, maybe some cannellini beans in in your minestrone soup, or adding in a can of black beans, rinsing it and putting it into a wrap. You know, there are so many easy ways to introduce pulses. There's a great brand called merchant gourmet which do pre cooked grains, which is really good if you're leaving a busy lifestyle as I often do. I mean, I think I'm gonna get home around 11:30pm tonight, so I always make plans and plan my week a bit ahead, look at where I can batch cook and make things easy for myself. And I recommend clients do the same.

Steven Bruce

Is there some advice in your book? Well, yeah, so that's about specific recipes. Oh,

Rohini Bajekal

yeah. So Part four is totally dedicated to nutrition. It has things like a shopping list, how to stop your larder practical tips for things like when you're eating out or on holiday, and it's got over 30 of my own recipes in there, which are all totally plant based, can be made gluten free oil free. low in sugar, oil and salt. That's what I called SOS, salt, oil and sugar. These are things we want to minimise and actually maximise things like lemon lime, herbs and spices, which are the most antioxidant rich of all food groups, and really lots of vinegars and things like that which don't add extra calories that can add lovely flavour to dishes.

Steven Bruce

Okay. Me whoever that is says Could you talk about the connection between PCOS and infertility?

Rohini Bajekal

Wonderful. So that's really getting to the crux of the issue. Eight out of 10 women with PCOS do struggle to conceive. But the good news is the overall fertility across the lifespan doesn't seem to be decreased in PCOS, it's just that the journey might take longer. And often that's to do with the fact that women with PCOS are not ovulating or they're ovulating very infrequently. Sometimes. There are some cases about 20% of women with PCOS do have regular periods, that it's not doesn't automatically mean that they're ovulating, that it's a good marker. And there are tests that you can do obviously like the progesterone test and things like that, but the good news is that most women do who want a baby do end up going on to have one. And it's a Bucha. Remember, not everyone, obviously, with PCOS is making fertility their goal. But it's important to find out if that is the case and empower them with that information rather than the main thing most of my clients remember is that moment in the chair where the doctor told them, you're not going to be able to have a baby or you're going to struggle to conceive, and that sticks in their head for years, and they carry it from the time they're a teenager. And they've carried that stress for them. And what the regards to PCOS, there are other options for assisted fertility treatments. There are things like IUI or IXXI, where you use letrozole or IVs. But really, you want to try and get as healthy as possible prior to pregnancy and PCOS and dietary and lifestyle model. lifestyle modifications can work a charm I have personally in my intellects that I work one to one with clients, providing nutrition and lifestyle advice. I have lots of GPS, I actually have some osteopath, and things who recommend me. And I've worked with women where they have been trying for a year, maybe two years, and changing their diet making these changes. And looking at them. I look at them holistically, I look at them, you know that we're all holistic beings looking at all these pillars? Could they add in some time for some stress management techniques and breathing and breath work? And that would that work for them? Could they spend more time with their friends meeting them for a drink? Could they cut back on the coffee? We know that with the cortisol dysfunction, we don't want to be having a lot of excess caffeine. So switching that out, and especially in pregnancy, and it's something we want to really keep on the low. And so could they swap that out for something else, maybe you know, another warming drink? Can they try and move more even walking or strength training particularly helps with glucose disposal, and they have found that they're able to conceive and get pregnant and it's not just about getting pregnant, we want to have a healthy pregnancy. And because we know that if you put PCOS, you have a far higher risk in pregnancy higher risk of preeclampsia, which I think Kim Kardashian had, and that made it really famous and they share lots of pictures of her on the media was horrific about this.

Steven Bruce

We were short of pictures of Kim Kardashian. Yeah.

Rohini Bajekal

Unfortunately, you know, she was absolutely not I'm not a fan of hers, but she was mocked for having this preeclampsia, and which is, you know, pregnancy related hypertension, gestational diabetes, again, if you've got at least twice the incidence in PCOS large for their age babies, and that cross Samia and other issues as well. women with PCOS are three times more likely to miscarry? Which is is something it's really hard to understand exactly why that is. The observation is mostly observational data at this point. And it's hard to know exactly where that is. But for the question about this, infertility has been actually associated with having as big an impact on quality quality of life as a cancer diagnosis, and a serious depression. So it should be taken really seriously. Well, there's

Steven Bruce

huge pressure on women isn't there in that regard? There's their societal pressure as well as hormonal pressure with the drive to have babies. You I think said did you say 80% of people with PCOS will struggle to conceive longer. Do you know how many people who don't have PCOS have struggled to conceive? What's the proportion that because they aren't the only people?

Rohini Bajekal

Yes, of course what it's it's it's 111 and eight couples have I think infertility and it could be related to PCOS or unexplained infertility. There are other factors obviously as well but it's clearly a lot higher a lot higher in PCOS and and other conditions as well as endometriosis as well as if you've got PCOS. You shouldn't wait the full year before seeking GPS help. If you've been if you've got PCOS, and you know, that's going to take longer, then get a checkup at six months, you know, get a semen analysis, get all your tests done. Just so you know. Okay, is there anything else we're dealing whether your fallopian tubes, okay, your is your? Is there any other issue other fibroids or anything else just to rule out anything else? So six months for women under 35. And over the age of 35. You should get a checkup anyway after six months. And if you're 40 goes to your doctor immediately you don't waste any

Steven Bruce

time. In your experience. What will the GP do if you go along and say, I've worried I've got PCOS? So will they will they respond the way you want them to? Or

Rohini Bajekal

really depends GPGPU there are some amazing GPUs out there and again, it really depends on the person you know, the NHS has quite a strict cutoff for BMI I think it's 30. And so if your BMI is too high, which a lot of women with PCOS experience, they're not actually eligible for fertility treatment on the NHS. And so that can be really devastating obviously so often it's about achieving that diet and lifestyle changes to try and get to that week. That's

Steven Bruce

really what that BMI criterion is also postcode dependent as well that one CCG might have a completely different measures.

Rohini Bajekal

But yes, we have we mentioned the postcode lottery and that and actually how this can actually impact women of worse socio economic means and also from certain ethnic minority backgrounds. You know, women who have dark skin and or certain backgrounds like South Asian or black actually don't get the fertility help, then they are needed. And there's a lot of

disparities in care when it comes to ethnic groups. We actually have a whole chapter on how that affects women with PCOS. And they're kind of conceived by people as having larger families. So it doesn't really matter if you haven't been able to have a child and all of these sorts of awful things, that it needs to be treated really sensitively. And but yes, it does. It is higher. And he says it's the number one cause PCOS is the leading cause of infertility globally. So it's a huge, huge issue. And that yes, as I mentioned, most of them will go on to conceive, and it might just take them that bit longer. But it's important to get it to get the levels checked out and see, the most important thing is to obviously be having regular periods. If you're not menstruating at all, you can't. Yeah, lots of women that I see. And they say to me, I've been trying for two years, I've how many periods have you had in that time, I've just had a handful. So it's obviously going to take a lot longer to actually get to the point where you're ovulating regularly, which you can achieve by again, lowering that insulin resistance, and normalising those hormone levels through diet and lifestyle and potentially with some medication, things like that format and other things that can be helpful actually for fertility. Good. Women do something that they should go to check all of those things. Again, it's really wide ranging,

Steven Bruce

I think I think virtually everybody I've had on the show has said vitamin D supplementation, and because it's just so important,

Rohini Bajekal

everything particularly deficient in vitamin D seems to help with insulin sensitivity is particularly deficient. And it's to do with how how it's metabolised. It's kind of a complex. Yeah, complex balance. I'm not a vitamin D expert from but from what I read in the literature, it's to do with Yeah, actually, how it's how it's metabolised. And obviously, people like me who've got darker skin, well, we're even more risk. So when I whenever we're visual, I've been tagged in the past, I've always been vitamin D deficient. So I do take a slightly higher dose and make sure I book in this summer holidays.

Steven Bruce

Georgina says breast Breastfeeding has a protective effect against developing type two diabetes for the mother. Is there any evidence that breastfeeding could help with insulin resistance related to PCOS for the mother as well?

Rohini Bajekal

Logically, it would seem Yes, but we just don't have the studies on that. So I just don't want to add to the check. Sure. But yes, obviously, breastfeeding. There is There was a study showing that women with PCOS can sometimes find it harder to breastfeed, and that's again to do that with those higher androgen levels that can affect so many different things. And so many, you know, studies that we still need more information on I know that this work, especially applied to physical therapist, but part of the reason for even finding fertility issues and challenging is the sexual and relationship dysfunction. So pelvic floor dysfunction, that could make sex more painful. And obviously, that can be really not only just embarrassing, but stigma and other stigmatising issue to ask for help without and it can affect quality of life. And the level of hyperandrogenism is actually correlated to the level of sexual and relationship dysfunction. So obviously, that can impact intimacy and relationships between partners as well. So yeah, this is something physical therapists can be more aware of

Steven Bruce

healthcare professional in this field, I'm sure told me recently that there is a renewed feeling that formula is okay for babies. Is that something that you've looked into it, you know, about,

Rohini Bajekal

I do advise women who are pregnant and who are planning to feed that baby, but it's not something that I would want to like weigh in on with my opinion, especially since I don't have children personally and be I think there's so much judgement towards women and PCOS is a great example of that. So I really do think it is such a, we need more support for women clearly to breastfeed and to have that support right from the time before they're even pregnant. And to have that, you know, that ability, not everyone can afford a lactation consultant when things go wrong, clearly and the NHS is so squeezed by the burden of chronic disease in this country that there's even less resources for this. But I ultimately feel that there's so much judgement on Mothers and all women in general that it's their Yeah, their decision on how they feed their baby.

Steven Bruce

Somebody who's called a according to my list here asks, what is the bioavailability of plant proteins versus animal proteins?

Rohini Bajekal

Oh, this is a great question. So there are some studies showing a reduced bioavailability in certain plant proteins. When you look at the overall index however, all plants look there's a lot of confusion about protein and plants or all food apart from actually dietary collagen. All food contains all nine essential amino acids there's slightly the plant protein is lacking or you have to combine proteins and plants and that was because of very outdated diet that was came about in the 1980s is where they said you have to combine the finding Loma thymine foods with like low lysine foods. So rice and beans needs to be eaten together. Whereas actually we cycled through amino acids on a kind of 48 hour basis. So if you're eating a variety of plant foods, and paying attention to plant protein rich foods, you're going to be getting enough protein and fat. There's a study that showed about 70% of plant based eaters actually get more protein than they need. However, I always recommend going for really rich sources of plant protein to be soya soy is a fantastic food review CLS and things like quinoa soya. These are brilliant foods and have a comparable protein index to animal proteins such as chicken and things like that. For example, I saw that yeah, soya milk is good. I always prefer even more minimally processed soy so I personally do drink soy milk, and I go for calcium fortified soy and milk to obviously you know, protect bones and everything else but I go for a lot of tofu, tempeh edamame beans, and that actually has been shown to help with PCOS. It helps reduce LDL cholesterol helps with weight management helps improve skin texture and appearance, even wrinkles. And they've done great studies that can actually help women in the menopause who don't even have PCOS with hot flashes in PCOS has been that studies on there's been a lot of studies on Sawyer and PCOS which is brilliant and showing improvement in actually ovulation rates as well. And so it's a fantastic fertility friendly food now you want to go for we're not talking about the soya burgers and things that you might have on a barbecue once in a while we're talking about minimally processed forms of soya. And these aren't just fantastic sources of protein. They also contain great amounts of iron, calcium, manganese, potassium, and huge numbers of huge huge amounts of micronutrients which many of us are deficient in and can really help with with PCOS. So, a few portions a day is what I recommend

Steven Bruce

How will we recognise process soya and what is it that's happening to it when it's processed? That changes it from being

Rohini Bajekal

Yeah, it's often isolated from the original soya bean. So you've got soy protein isolates that you might find and things like protein powders or in slitter burgers and things like that. So generally it's the ultra processed foods also have other things like additives emulsifiers excess salt, oil and sugar to make it taste good. But I always as a nutritionist, it's very important to look at food and its entire package. So when you're looking at if you're just looking at kind of the protein quantity of a chicken breasts you might be missing the fact that uproot chicken breasts has exactly zero fibre. It also look at the weights produce 70% of the meat that we eat in the UK is from factory farmed animals. It potentially contains antibiotics and other environmental or environmental contaminants which we know this is a whole chapter in our book if you came across that yet, Stephen but women with PCOS are particularly sensitive to environmental contaminants and what are called endocrine disruptors which we find in everything. It's probably on this couch that I'm sitting on, you know, it's in maybe it's you know, if you're wearing things like polyester clothing, or shop receipts that contain things or plastic water bottles, we're drinking out of glass, but plastic water bottles can contain something called Bisphenol A BPA, which is an endocrine disruptor negatively impacts both male and female fertility, but women with PCOS appear to be particularly susceptible to that. So

Steven Bruce

just notice more and more things saying that they don't have BPA, and I had no idea what that meant for my health. The annoying

Rohini Bajekal

thing is that they contain other bits, minerals, so there's not total transparency. And ideally, you just want to stay away from putting kind of heating food and plastic and things like that. And again, it's progress not perfection, am I going to completely not go to the gym, because my leggings contain some, you know, recycled plastic or whatever. No, it just means that when I come back, I'm not going to sit in my gym clothes all day that would be probably quite uncomfortable and maybe quite smelly. And you know, change out to them and just be conscious of these things quickly. If you are trying to get pregnant. It's important and looking at your household products. Are you using a lot of bleach and fragrances? Are you lighting candles at home and this is relevant for everyone because household candles are actually a big contributor to indoor air pollution. So this is relevant for everyone who's listening, but it's a fascinating area of research where there's actually hard science it's not again woowoo science, it's out there

Steven Bruce

and carries us whether there concerns about phytoestrogens in Sawyer for PCOS and other hormone issues.

Rohini Bajekal

Fantastic question. So fighting estrogens are a plant estrogens are about 1000 times weaker than human oestrogen that you find and what's fascinating about soya and this is why I wish I had my mom because she's brilliant explaining how it works. Sweat is a very very clever been it has an anti estrogenic effect in certain tissues and oppose produce polygenic effect in some which is why we know that people who have had cancer and switch to soy milk actually have lower rates of recurrence we know that societies have this is again

observational data where they've eaten a lot of soy historically, whether it's Japan Korea had some of the lowest incidences of breast cancer. So, soya and prostate cancer if you introduce soya in adolescence, particularly in men, it actually reduces lifetime prostate cancer risk. It's a fantastic food for prostate cancer prevention. So it works very differently to mammalian history. And if you're concerned about oestrogen, I would definitely recommend you stay away from dairy because that is oestrogen that is designed to grow 25 pound baby a calf into a 250 pound cow. That's the type of oestrogen I didn't want anywhere near me. So with women with PCOS, I didn't have any hesitations in asking them to reduce the dairy if they're going to have dairy. And they really want to have dairy as a food that they are really committed to then I suggest they go for cemented sources lacto fermented sources and certainly stay away from things like cow's milk, which we know that there are studies showing that it can exacerbate inflammatory acne and things like that. So yeah, if you're concerned about that, remember that soya, there's a lot of hype about soy and that was a lot of great marketing by the dairy industry, but that would select soy is not the only food that contains phytoestrogens. It's also found in that a good example is lignans that are found in flax seeds and it's found in a variety of other foods. So chickpeas also contain them so you don't need to be scared of eating soya because it has no negative impact on male or female reproductive health and factors only beneficial.

Steven Bruce

Okay. There's a lot of information there. I'm guessing that people they want to get that information

Rohini Bajekal

and all the references. It's all in there, but I don't want to be I can sit here and talk about the fact that there's 100,000 studies on Sawyer with one of the biggest researchers is Dr. Mark Messina, as I recommend anyone who's seen Dr. Mark Messina, I recommend anyone is interested in looking at his work.

Steven Bruce

Sophie says that she was diagnosed with PCOS polycystic ovary is not the syndrome just cysts when she was in 2015. So it doesn't tell us very much less than two how old she was. Her cycles were around six to eight weeks long. That was her only symptom, no excessive hair or weight loss. She conceived her daughter within a month no issues. Fast forward six years to year in trying two years and trying to conceive again. And it's not happening. She's read a lot on PCOS and insulin resistance. And as a result, she went sugar, dairy and wheat free. And she conceived the next month. And he's now 10 months old. So I think she's backing up what you've said, Yeah,

Rohini Bajekal

fantastic. Well, I'm really happy for you. Because obviously secondary infertility is a growing issue. And especially you tend to be older and it tends to be an issue. But you actually should have been given a diagnosis of PCOS. Because if you had polycystic ovaries on ultrasound, and you had cycles that were six to eight weeks long, well, that's two out of three criteria right there.

Steven Bruce

Bad luck, Sophie, you're not winning the book? Because it wasn't a question. And you've already got a 10 month old as your prize for

Rohini Bajekal

two. Lovely. So yeah, thank you for sharing your story. It really is lovely to hear.

Steven Bruce

Now Amanda says that in other broadcasts, we've been advised that soil can increase inflammation in the body and might we might need to avoid this. Now I confess that I don't recall who said that.

Rohini Bajekal

That's just again, you know, we have over 100,000 studies on soil showing the safety and the benefits. I really, I mean, there are people online wellness influencers who are against soil for a variety of reasons, and it's really frustrating to me, because I need to see the science. I can't argue with that science. And what we know is, you know, a major dietetics and nutrition organisations like the British Dietetic Association, which is the leading organisation in this country recommend swears a healthful food. So I really, you know, I always ask someone, what is your level of science? And what is your level of nutritional qualifications bill to come out and say that if you personally don't like it, that's great, don't have it but only naught point 3% of the adult population is actually allergic to soy and naught point 3% of the European adult population whereas 70 to 85% of the global population has a degree of lactose malabsorption lactose intolerance and when people of colour like me is even higher, so you know it's an it's a no brainer. If you don't want to have soy you can still thrive eating plants without it but it is anti inflammatory and fat and there's no reason to fear it whatsoever. It's really sad that people still have these misconceptions and yeah, go with what major nutrition and dietetic bodies recommend and not maybe you know what you can hear it from anyone, always seek reliable health advice. Don't get it from your, your well meaning friends, your neighbours, and your boss at work anyone else.

Steven Bruce

We're going to run out of time before long and I particularly wanted to talk about what might happen when a typical patient comes to see us and the warning flags that we should recognise and the sort of questioning that we should you use in order to elicit the absence or presence of PCOS, which kind of relates a little bit to what Emily here says. She's especially after COVID, it's hard to get the GP appointment, nevermind to get blood tests and etc. And so she's asking whether you have forms for patients to fill in which increase the likelihood of getting the doctor to see them and recognise the importance of testing for PCOS. And my follow up would be, well, let's say someone's come through my door, and they've got low back pain and, and I'm just thinking, well, could there be anything else going on? As well as or maybe as a cause of whatever they're complaining?

Rohini Bajekal

That's a great question. Yeah. So I do, I'm definitely getting a book, I do say much education on my social media and otherwise, just for free just trying to empower people, so that they can understand the signs. And there are private providers like thriver, that have a PCOS blood tests and things that are, you know, that can be done at home. But obviously, your GP should really be doing it if you have any of these signs. So the main thing to look out for is remembering that periods are a vital sign if they're not on hormonal birth control, if they are obviously on the pill and things that's not a regular, it's on regular bleed. But if they're not on hormonal birth control, and they're not pregnant, then they should be having a regular menstrual cycle, which so

Steven Bruce

someone comes into my clinic and and I will always ask for the first appointment, I will be asking about whether they've got normal periods. And and they say, well, they're, they're a bit irregular. And actually, I'll think to myself, well, that's interesting. I'm not quite sure. I'm not quite sure what I do with that information. Where do we go from there?

Rohini Bajekal

So ask them, Do you track your cycle? How much does it vary by? Do you have a graph so if you've got an app on your phone, like clue or flow, these are free apps, you can put in your the first day of your menstrual cycle, and then every month it will tell you, okay? Your cycle varies by this amount. And that's really good because you can show your gynaecologist or your osteopath or whoever, this is my typical side, and you can see oh, okay, Sarah's telling you this. And it varies by one day, two days, it's 33 days 30 530-233-3435. That's a normal cycle, if it's sort of 28 days, 35 days, 29 days, 45 days, that's usually PCOS. You know, that's not not usually that could be a variety of other issues. But that's a sign that it could be PCOS, especially if they've got other symptoms. So that's a that's a chance to kind of ask more questions, but also really understanding their quality of life. You know, a common complaint of PCOS is fatigue. So, that's something so many people are dealing with, especially with that outpost's pandemic and everything else. And the last couple of years, it's been really hard on people, but those signs of insulin resistance, so if they're getting constant sugar cravings, do they do they most importantly, exhibit the signs of hyperandrogenism, which, as physical therapists, you might be in a really good place to notice. So that acne that looks really angry, it looks really and it's not just one or two spots before your period. It's that cystic inflammation, and do they have any signs of excess hair growth, perhaps in places they may not want as women you know, that or that their chin, their jaw line, and maybe they could have maybe, you know, on their stomach and back and things and again, this will vary depending on ethnic group, so you shouldn't automatically jump to a conclusion of PCOS but it can be assigned and then yet the acne around the back and things like that.

Steven Bruce

It's a difficult thing to bring up there even in a medical consultation, isn't it so see, you've got more hair here than is normal.

Rohini Bajekal

And you I think it is difficult to bring up and so just really listening to the patient looking for openings and compensation and not using stigmatising language, for example, not discussing testosterone as being a male hormone because actually, all genders have testosterone. And it's only very slightly higher and when we PCOS, but interestingly, probably due to the slightly higher amounts of testosterone. PCOS is the most common menstrual disorder amongst Olympic athletes, which was a nice fun back to include in the book. But that's quite empowering. But you know, looking for just asking them Do you have do you? Do you notice any skin changes? Do you? Do you notice any kind of differences around your period, you have any signs of PMS, just getting them comfortable talking about their menstrual cycle, and then also the other symptoms? And you could notice that men say, have you? Do you have anyone in the family who's got type two diabetes as a great question to ask, you know, did your mother or father or sibling have a child have type two diabetes, and that's a warning sign for PCOS because your as I mentioned, is a complex genetic trait. If you've got a relative with type two diabetes, you're much more likely to have PCOS, if you're a woman is asking about that scalp hair loss. And of course, it's difficult to opt to point out these things and say, Oh, you're quite hairy. You know, you don't sort of the way you want to go. But just think Do you ever know Do you ever notice that? You might be

having some signs of, you know, excess And or hormonal imbalances and maybe positioning it that way and just asking in a more sensitive way and listening to them, and they may open up to you and share that they are trying to conceive, and they're finding it difficult. Or that they're really, you know, they're falling asleep at work, because they're really exhausted all the time, and they don't have much energy. All of these sorts of things can be signs of, of insulin resistance, and particularly if you notice those, that those dark velvety patches that anchor, I can do this and they can, that's a great thing for physical therapists to notice around the neck and the underarms and darkening of the skin. Those are those are important things to point out because they may go on name again. I can do sis nigricans. I can

Steven Bruce

ptosis nigricans, right. Yeah.

Rohini Bajekal

And obviously, the excess weight gain, you'll often hear people say, look, I really struggle. I tried dieting, I tried doing all these things, but I just cannot lose weight. And this is something I think probably almost all dieters or people who are trying to lose weight, say and this is why I don't recommend dieting, because yo yo dieting increases hormonal fluctuations worse than sweet sleep quality and PCOS and increases cortisol levels. So we definitely don't want that. But I think looking for these physical signs is a really good starting point.

Steven Bruce

Sleep is a big factor in everything, isn't it? And I'm just wondering whether simply doing stuff to improve your sleep will have any effect on your PCOS, we're all rather it needs to be the other way around. But actually doing something to improve the PCOS through lifestyle changes will improve your sleep.

Rohini Bajekal

Oh, I'm so glad you asked that. So all the pillars of lifestyle, the six pillars, which is what our whole books about. So you know, nutrition, sleep movement, stress management, avoidance of tobacco and smoke, reducing avoidance tobacco, and reduction of alcohol, and then spending time with loved ones with positive social relationships. All of these are interlinked. And it's, we have a chapter called The dominant effect when one falls, so do the others when you've had a terrible night's sleep, you're much more likely to reach that biscuit and, and you have those, you know, the imbalances of the ghrelin, the hunger hormone, and the leptin, which is the satiety hormone. So, sleep is a huge issue in PCOS. Sleep disturbances are more common in PCOS, with many reporting insomnia. And that's increasingly common amongst the British public in general. But women with PCOS also have higher amounts of sleep apnea. And if people aren't aware of that, that's when your breathing stops and starts in your sleep. And it's a really serious condition, it can actually lead to more metabolic issues down the line. So it needs to get checked out. But it's hard to diagnose. One of the key things is that kind of gasping for breath snoring, that's really common in PCs and reduce daytime functioning. So waking up and still feeling groggy and tired and just having a poor night's sleep. And again, diet and lifestyle stress management, this can all help if you're lying awake, ruminating about your excess hair or fertility issues, that's really gonna affect you. So being sensitive about that I found for me exercise no huge difference in strength training or resistance training in particular, is important for all of us. Anyone who's listening and is over the age of 30 needs to be doing some strength training two times a week. And because we lose lean muscle mass every year up to the age of 30. And strength training and PCOS actually helps with glucose disposal. And one of the most

simple things and beautiful things you can do in PCOS is go for a 10 minute walk off for a meal that helps with those posts with that postprandial exercise, which is exercising after a meal helps reduce glucose excursion. So it helps rather than getting that kind of high spike, especially if you've had a carbohydrate rich meal. And remember, we want to focus on carbohydrates, but good quality call up carbohydrate sweet potatoes, oats, brown rice, quinoa, not your white rice, white bread or white sugar. But going for that 10 minute walk can make a huge difference. I hope that helps with sleep. But sleep is a really important pillar.

Steven Bruce

Right? Thank you. Now we haven't got very much time left and we might get time for another question. But we've also got to decide who's going to get the book. Oh, yeah. Have you had any thoughts about which of those questions you liked most? I think there were lots of

Rohini Bajekal

I'm surprised that more people didn't ask about supplements but we do have a whole supplement chapter in the book. I think

Steven Bruce

I'm looking back through the list of questions here to see when I

Rohini Bajekal

actually really the one that stuck keeps stuck in my head was that in Mega three question, I thought that that was very scientific. Right. Okay, I'm glad that was brought up because of Omega three buses and mega six and everything

Steven Bruce

else that is going to know who she or he was just trying to find it in here. So here we go. It's xojo so as long as we can identify who xojo is from the from the chatline xojo Those questions

Rohini Bajekal

are great. I felt that one was the worst one was the carnivore diet. Please,

Steven Bruce

not gonna send him that book. Right. Okay, so we're gonna give that one to xojo. That does give us time for just a little bit more. We've got 410 people watching, which is a pretty good number for anything.

Rohini Bajekal

So remember, if you've listened to this and you've learned anything about PCs and just how complex it is, don't be afraid to empower your patients just because you don't have all the answers, you could be the first person in their life that actually lets them know that, you know, this is something that they could get looked into. And you could prevent them from years of suffering, either with infertility, early type two diabetes, or lifelong, you know, other issues. So yeah, what

Steven Bruce

I was gonna ask you, you talked several times you talked about stigma. I don't perceive that there is a stigma to having PCOS.

Rohini Bajekal

Really? Yes.

Steven Bruce

Am I wrong in that?

Rohini Bajekal

It's huge. Yeah, I think there's huge stigma and having PCOS to come out and say, why why do I? Why do I know that there's stigma because most people don't talk about the menstrual cycle. They're sticking around periods still in 2022, which is absolutely astonishing. You know, women still are not able to, for various reasons are given the space in workplaces to talk about that, let alone things like the menopause and PCOS is hugely stigmatised. And there's a reason why, even though there's been this huge rush of celebrities talking about endometriosis, which is a really devastating condition. But celebrities have been talking about it. And a lot of celebrities are not talking about PCOS. There's been a few like Rebel Wilson and Victoria Beckham's a famous case of you know, someone who had PCOS. And it has really done a lot in terms of lifestyle management, someone

Steven Bruce

I've ever noted as having weight issues, we're not overweight.

Rohini Bajekal

Again, 20% of people like me, the PCs don't have weight issues. So don't assume. Spice Girls actually watched a documentary about her the other day where they were making fun of her acne and there was a tape of her in the audition where they said, lovely girl great, you know, personality shame about her skin though. And they zoomed in on her cystic acne. And it was really inflammatory. And she probably made a lot of dietary and lifestyle changes. Although that doesn't automatically fix everything in PCOS, you can be leading the cleanest, healthiest lifestyle ever. But there's a huge amount of stigma coming out and saying, I've got excess hair growth. I've got infertility, I have irregular periods, higher testosterone, and I'm losing the hair on my head. I mean, what's not stigmatise?

Steven Bruce

That I can understand that I can understand having to read some without having to talk about your periods. I'm going to talk about, you know, excess hair, that's one thing, but PCOS to most people simply means you have a syndrome.

Rohini Bajekal

But then they asked what that is. And it takes a quick Google to find out and the fact that most people don't know what it is already shows you that stigmatised because if it affects 10% of women, and no one's talking about it, that's one in 10 of us. And most of us don't even know we have it. So there's a huge amount of work to do. It's a it's actually a political issue. There was a great parliamentary debate last year, unfortunately, nothing much came out of it on endometriosis and PCOS. But at least it was on the table where we need to actually be increasing conversations in the USA, and PCOS and its associated complications costs the US \$10 billion and spending \$10 billion of the costs associated with PCOS and the metabolic issues as a result of that. So it's got a huge burden, both for the individual and wider society. And so yeah, oh, completely. I really appreciate you saying that. Because I think it's nice that there are men like using, you know, actually, we should be talking about this and having a space to talk about it. And that's why everyone has listened

to this. Hopefully you can go and empower your patients, but also other people that you meet, to maybe understand this condition. I

Steven Bruce

was very pleased. Last minute. I'm very pleased that we I think we brought up a number of topics on this show this before any

Rohini Bajekal

questions. I was like, some of them I wish I had more time to answer because I couldn't. They are not simple questions, including things at the plant protein index. And you really could do a whole session just on that. So

Steven Bruce

just wanted to come back again.

Rohini Bajekal

That I really appreciate everyone listening. And I know that it's a complex topic, and there's no easy answers, we often try to just find a quick fix solution. That isn't one that you can live a long and healthy life. You can put your symptoms in remission, and you can have a joyful life with PCOS. And yeah, manage the the symptoms and the condition

Steven Bruce

Rohini you've continued the family tradition, you've been a great speaker, really, I'm always in awe of people who can just drag up all this information off the off the cuff because I'm not asking you to follow a script here. I'm just asking you to always stuff and some of the viewers, you just come out with all this information. It's marvellous, it's been really informative. And I'm absolutely certain that there are many of the audience are going to go away so well at least, I've got something else I can help patients with as a result of this. Sadly, however, we have now run out of time, as always long before we run out of information, as you can tell, and long before we run out of questions, but I really, really hope that you've got a lot of useful material to help with your patients from this. I can't believe you haven't.

So from all of us here, thank you for taking part and good night. And thank you