Dr. Joseph Alukal:
They're not concerned about this. It's not something that affects them on a day-to-day basis and they say to themselves, oh, when the time is right, I'll be able to have my kids. I'm just not going to worry about it. Then something changes in their life. They embark upon family building and some number of them will figure out that they cannot easily have their children, and for heterosexual couples attempting natural conception, that's one out of every six couples who tries to have a child and cannot get pregnant naturally within a year.

LuAnn Heinen:
That's Dr. Joseph Alukal, a specialist in men's health and fertility. He's Associate Professor of Urology at Columbia University Medical Center and Director of Men's Health at Columbia New York Presbyterian. His research has addressed male fertility treatment, testosterone replacement therapy for those with coronary artery disease and erectile dysfunction, and fertility preservation for transgender women. Dr. Alukal has authored or co-authored over 30 peer-reviewed publications on male fertility challenges.

I'm LuAnn Heinen and this is the Business Group on Health podcast, conversations with experts on the most relevant health and well-being issues facing employers.

Today we discuss the overlooked topic of men's health and fertility, including whether sperm counts are in fact on the decline, common causes of fertility problems in men, and approaches to both prevention and treatment.



Dr. Alukal, thank you so much for joining us today. I'm really excited for this conversation. It's not an area of expertise that I claim, so I'm really glad you're on the line to help with that.

Dr. Joseph Alukal:
Happy to help. Thank you, LuAnn.

LuAnn Heinen:
We've seen some news reports that sperm counts are declining throughout the Western world and have dropped by almost 50% in the last 40 years. I know that's a little bit controversial. Is it a real trend? Has there been more research or more evidence than the single study that was so publicized back in 2017 and in years since?

Dr. Joseph Alukal:
It's a great question and an important question. I'd probably start by taking one second to talk about that. A normal sperm count might demonstrate anywhere from tens to hundreds of millions of moving sperm. This is a huge number, obviously. This kind of testing, unlike something along the lines of getting your kidney function checked, that's a blood test, it's run in a laboratory by a machine, and so you get a very quick answer. Whereas sperm count testing, you're talking about something that is fundamentally subjective because it's performed by a human being. There's some amount of error. I don't feel like the test falls apart completely or needs to be ignored completely, but I ramble through this in order to create some context for the idea that how we perform semen analysis has certainly changed over the past decades. To go back to your question, when we're talking about the most recent study published on this topic in 2017, which made a really big splash at the time, what they observed did seem to indicate that yes, the average sperm count, total modal number of moving sperm, this has gone down over some amount of time since the beginning of us recording sperm count testing results. It's the first time I think we can look at one of these studies and say to ourselves, okay, we have a basis for believing this result and believing that this is real. The follow-up question would be if we think it's real, well A) why, and B) what do we do about it?

LuAnn Heinen:
Why isn't there more information given the importance of male as well as female fertility?

Dr. Joseph Alukal:
Also, a great question and I think some part of the barriers that we encounter when we're trying to get these patients taken care of, a lot of it has to do with things like shame and embarrassment. People don't want to talk to family or friends about these sorts of problems. I do feel like in 15 years of practicing in New York City, I've seen those sorts of reasons for people not being open about these kinds of problems. I've seen them become less and less paramount to patients. I feel like they're less caught up with this sort of stigma, but at the same time, I recognize that stigma is real and I'm never going to discount it. If a patient were to tell me, hey, I'm embarrassed or uncomfortable about this particular topic, and relatedly New York City is probably different than other places in the United States or the world where there may certainly be cultures where having this sort of discussion with family or friends is frowned upon. The notion that people are not always participating in this testing when they need to, I think that's a real problem. Relatedly, when you start thinking about doing research on this topic, if the data you have to work with is flawed in some fashion in the first place, it discourages researchers from sort of pursuing the same questions. If they're worried that no matter what, however they answer the question, they're always just going to run into a brick wall. I think a lot of people have turned away from trying to answer this kind of question because of that particular limitation.

LuAnn Heinen:
We know that men are less likely to seek medical care than women, but I'm almost surprised to hear you say that that actually, in this instance, could be affecting the kind of data that's available to produce the research that we need about men's health and fertility.

Dr. Joseph Alukal:
I agree. I would love to be able to stand on a tall enough bully pulpit and yell at everybody, hey, why are you afraid to go to the doctor if you're a man? Why aren't you seeking out the medical care that you need or may need? And in parallel, why be worried about what somebody thinks about you, if you explained that you had to go in and do sperm count testing. What's embarrassing about that? Certainly, when you put it in the context of either real illness, okay, why would we choose not to get care when we're dealing with real illness or the real stress and burden associated with wanting to start a family and not being able to.

LuAnn Heinen:
There are social attitudes about masculinity and male behavior that may still be a factor. I think you're alluding to that. I mean socializing men to be tough and ignore symptoms that could signal weakness.

Dr. Joseph Alukal:
I do think that plays a very, very large part in this. Again, I would say in my own 15 years in New York City, I feel like maybe slowly the tide is turning, okay, but I also can't tell you that I know that that necessarily correlates to the experience of other physicians like myself around the country. I agree with the idea that some part of this has to do with a socialization piece that's very real.

LuAnn Heinen:
A Cleveland Clinic survey I saw found that most men would rather do almost anything including clean the bathroom or mow the lawn, than go to the doctor. If they aren't going to the doctor for their preventive visits and maybe are ignoring potentially serious symptoms or pain, what is it that gets them to the urologist for fertility or sexual health problems?

Dr. Joseph Alukal:
Sure, that's interesting. I hate to say it, I mean I love mowing the lawn, I don't think that's the most sort of easily denigrated activity. Cleaning the bathroom, I don't know anybody who finds that fun. I'd hate to say that we as physicians are making this experience so difficult for patients that we’re down the list from both those

tasks. But to go back to your point, when men come to see a urologist with a sexual health complaint, I understand what it is that brings them in. They're motivated to solve this problem that is affecting something that is a very important part of their life, and we use the analysis you're talking about as a basis for justifying the existence of what we call multidisciplinary men's health centers. At big institutions around the country, and Columbia is one of them, we have these teams of doctors, internists, cardiologists and urologists who are trying to take care of the men who come in to see a doctor like me who are saying something like, doctor, it just does not work the way it used to in terms of me being able to have sex. Most typically that complaint is I cannot get an erection the way I used to. If that patient is, for example, in his forties or fifties and he has no other doctors, I try to help him solve his problem, but in parallel to that, I remind him, hey, this could be an indication that you've got some other health issues that you need to know about, why don't you go see these other doctors I work with who can help make sure that there's nothing here you need to worry about. If you've helped the patient feel less uncomfortable with him being there in your office, almost always he's going to say, yes, I'd really appreciate that, doctor, thank you. I've been worried about this for a while.

LuAnn Heinen:
Yes, you're almost saying that sexual health issues could be a doorway to identifying other health issues once you have a trusted relationship.

Dr. Joseph Alukal:
Certainly and even without. For men who are single, absolutely the same sort of rule applies to those complaints. Again, the same sort of logic underpinning that, hey, let's catch this person while we can. It has to do with the fact that men are proven to be least likely to put themselves in front of a doctor, especially men between the ages of 25 and 45.

LuAnn Heinen:
I think men in that age bracket don't think about fertility, or if they do, it's not from a place of worry or concern. It's an assumption. I'm fine.

Dr. Joseph Alukal:
I was going to try and make the leap to that sort of related topic in that the fertility piece is also a complaint that is very, very often it's personal, it's private, it's difficult for people to be willing to open their mouth and talk about it, but it almost inevitably involves another person. I agree with you that many, many times when you're starting with the person in the front of the age demographic I just talked about, they're not concerned about this. It's not something that affects them on a day-to-day basis, and they say to themselves, oh, when the time is right, I'll be able to have my kids. I'm just not going to worry about it. And then something changes in their life. They embark upon family building and some number of them will figure out that they cannot easily have their children. And for heterosexual couples attempting natural conception, that's one out of every six couples who tries to have a child and cannot get pregnant naturally within a year. That's our textbook definition of what we call infertility.

LuAnn Heinen:
Did you say one out of six couples?

Dr. Joseph Alukal:
One out of six. Yes, so it's a common problem and of those 50% will ultimately have a male issue that you're going to identify after sperm count testing or an examination of the patient.

LuAnn Heinen:
Either as the only reason, principal reason, or as a contributing reason?

Dr. Joseph Alukal:
No, of that 50% of couples, you're exactly correct. A quarter total or half of the 50% are male factor only, and then the other quarter of the total or the other half of the 50% are both male and female factored together.

That leaves the remaining 50% of this pie, this math always seems not to add up correctly in my head, which is female factor only. That's some part of what drives, I think, some of the bias to women being more likely to put themselves in front of a fertility medicine specialist than men. I think some of it is the socialization piece that we've talked about. Lastly in there is one of the barriers to men seeing a doctor on a regular basis in this age range, which is women in that age range typically have an established relationship with the provider in the form of a gynecologist. So a yearly visit or a nearly yearly visit is oftentimes a normal context for a woman to bring up the fact, you know what, my partner and I have started trying to get pregnant, but it's been 10 months now and we haven't gotten anywhere. That female partner may be more likely to get put onto the track of, well, let's try to figure out why. Then the male partner who has to seek out someone like myself when they don't already have an existing relationship with someone like myself. Now the carryover is yes, in many sort of couples it is oftentimes the other partner who drives the man in and says, we're not getting anywhere, you need to do some tests or to see somebody. Sometimes that partner, if they're seeing a reproductive endocrinologist, the reproductive endocrinologist will tell the male partner, hey, when do we do sperm count testing and figure out how things stand? There's ways eventually that that person sort of gets into the hopper where we start to figure out what's going on, but again, there's delay to that and along the same lines three years prior when these people are not thinking about trying to start a family, it's almost never on that guy's radar, why don't I get checked out, why don't I get tested? Those things tend not to cross a guy's mind.

LuAnn Heinen:
Does delayed parenting contribute to male fertility problems as well as female? I mean the difference between 25 and 35, does it matter for men?

Dr. Joseph Alukal:
25 and 35 I tend to think of as not mattering. We do have a much better understanding of this data now than when I was in training. So the two questions that come up are fertility potential, in general - is the same man at age 25 more likely to initiate natural conception than he is at age 45, age 65, age 85? The answer is for myriad reasons, not just something inherent to sperm, the answer is yes, he's going to have an easier time at 25 than he does at 85. But then relatedly, there's a separate question of are there any genetic risks to his offspring as he gets older? The studies seem to tell us that each decade a man ages, the risk of a few genetic conditions increases by something like single-digit percentage points. It's not undoable in terms of being able to say to a man as he gets older, hey, there's some age beyond which you just can't attempt conception. That's not the case. Whereas, obviously there's sort of a naturally occurring stop sign for a woman as she ages, that can be bypassed with things like OSI cryopreservation egg freezing, but the biology of this is different in men and women. But at the same time, when I see a man in his middle age or older who's looking to embark on having a child, I do have to level set him in terms of, hey, it might be more likely that you need help in the form of something like intrauterine insemination, artificial insemination, or in vitro fertilization.

LuAnn Heinen:
I'm speaking with Dr. Joseph Alukal, a urologist who specializes in men's health and fertility at Columbia University Medical Center. He's a past president and current board member of the Society for the Study of Male Reproduction and serves as clinical director for the New York Presbyterian Reproductive Tissue Bank. We'll be right back.

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LuAnn Heinen:
I'd like to ask you about fertility preservation and preventive practices in general for men, but also for transgender women. I know you've done some research and some work in that area.

Dr. Joseph Alukal:
The fertility preservation piece, we're usually having this discussion in a young man who is about to embark on treatment for cancer. Many times in young men that's leukemia, lymphoma or testis cancer. The first two certainly treatments that we have to use for those diseases, depending upon the type, can have a negative impact on fertility. And then testis cancer, the disease itself carries risk with regard to impaired fertility. We're always trying to get those men, hey, you should get yourself to a sperm bank, provide a sample and have it frozen. You say this to patients and many, many times, understandably, they're more worried about surviving their cancer. Maybe at that moment in their life, they're not worried about having kids yet and so some guys will tell you, no, I'll think about this, but I'm highly unlikely to do it, doctor. Other people who you see years down the road who are like, you counseled me to do this 10 years ago and this is how I ultimately had my children and I want to say thank you. So that's why we make the effort and have that conversation with everybody.

LuAnn Heinen:
Is there a big cost to do that? Is cost a barrier?

Dr. Joseph Alukal:
It's not. There's not. Sperm banking tends to be pretty inexpensive, in the hundreds of dollars upfront and hundreds of dollars per year, not thousands, but it depends upon how many sperm are banked. In the future are you going to be able to do something other than IVF with those frozen sperm, which can sometimes be a hidden cost in the thousands of dollars. I've also watched that over the past 15 years, insurance coverage for fertility medicine has gotten better every year, thank goodness. So I can tell guys now, hey, there is a real chance that you might be able to use your frozen sperm in the future without a tremendous expense and that's how you're going to have your kids.

LuAnn Heinen:
Well, this is a bit of a diversion, but I did just read that mental model was always that the sperm swim to find the egg and that there's apparently new research saying that the egg has a choice in what sperm is attracted.

Dr. Joseph Alukal:
I've heard about this in terms of peripheral discussions of which sperm is allowed to fertilize an egg. There's this remarkable event where once that final sperm binds and penetrates, the zona pellucida immediately becomes impenetrable to other sperm. If there's a door that can be locked, what allows something through that door. But I think what you're alluding to is research that's indicating that in some sort of fashion with regard to attraction of what's in the tubal fluid that oocytes can draw different kinds of sperm to them. We didn't talk about it yet, but one of the kinds of in vitro fertilization that I find fascinating enables us to treat men with really severe infertility problems where you take a single egg and you grab a single sperm and you directly plunk it into the egg. This takes a super specialized technician. They have to obviously visualize these two structures which are incredibly small, manipulate the two of them, which is remarkable, and we call that ICSI, intracytoplasmic sperm injection. We learned a lot about oocyte fertilization and early embryo development as a result of being able to offer this to people. Then as well, it enabled us to talk to somebody who had only single or double digit sperm to work with and say, well, if you use this technology, we have a chance of being able to get you guys embryos and it will ultimately get you pregnant. It was a huge leap for treating severe male fertility issues. It also enabled us for the first time to reliably use sperm that had been taken out of the testicle with surgery. This advance was developed in the late eighties into the early nineties

and then deployed in humans for the first time in the mid-nineties, and it really changed what we could do for male patients with severe male factor fertility issues.

LuAnn Heinen:
Wow, the trajectory of scientific development in this area is amazing over the last few decades. Amazing.

Dr. Joseph Alukal:
Yeah, no, the idea that IVF is a technology, in vitro fertilization itself only really becomes available in 1979 and 1980. The first baby born to IVF Louise Steptoe* is now, unless I'm wrong, she's 42 years old. So the idea that this has fundamentally changed the course of the lives of families around the world, but then relatedly has created lives, and you're absolutely right that the trajectory of change in this field is just remarkable.

LuAnn Heinen:
I want to ask you about, in the multidisciplinary men's health center that you lead or that others around the country, is mental health or services for mental health or depression or anxiety, part of it and how do they relate to your work in this space?

Dr. Joseph Alukal:
Hugely important and it's been important for such a long time, but even more important now because I really feel like there is so much research pointing us towards the idea that there is a mental health epidemic that we are in the midst of trying to navigate. We have access to a really remarkable and world-class Department of Psychiatry here at Columbia and we're constantly plugging our patients in with them. As a result of the pandemic and since, almost all of Columbia's psychiatry care is provided via telemedicine, so we don't have a physical provider sitting in a space with us who we take a patient by the hand and say, you need to talk to doctor so-and-so today, but we do plug them in to speak to Columbia providers as soon as possible. I do think, depending upon where you are in the United States, you're going to find that either the mental health care providers are physically located in the facility or they're on speed dial.

LuAnn Heinen:
Do you see men who need more mental health support because of fertility challenges?

Dr. Joseph Alukal:
Sure. That's a super burdensome problem from a mental health and emotional health standpoint for male partners, female partners. I mean, it burdens everybody who's trying to embark on family building. The stressors are real. People asking questions like, are we ever going to be able to make this work? People trying to navigate issues like cost. It's a tremendously stressful experience and there is data now supporting that. It's not just me asserting it. The data looks at what was the impact on your quality of life for undergoing fertility treatments. Most of the fertility centers that we work with, they do have mental health professionals there who are prepared to talk to any and all patients who raise their hand and say I need this help. I wouldn't be surprised if everybody benefited if that was a mandatory conversation. I'm just amazed to imagine that there's any patients who go through that and they aren't in some way impacted emotionally by the experience of having to pursue fertility treatment.

LuAnn Heinen:
Regarding the women's health side of things, we really dove into women's health with a lot of enthusiasm over the last few years through fertility. That was kind of the portal and now the focus is going to other areas, perimenopause, menopause, later in life kind of the whole life cycle, the hormonal cycle facing women and how that's affecting them, their health outcomes, their career trajectories at work and so on. Do you think that we'll see that on the men's side as well, and then what are the effects on the aging male and what can be done to support them?

Dr. Joseph Alukal:
I think that's a great question. I do think when you talk about the multidisciplinary model of women's health, there is a lot more that we know. It's a very complex and multifaceted discussion in terms of the hormonal events in a woman's life, how they affect her overall health at that moment, her overall health in the future, and relatedly her aging and her risk of diseases associated with aging. The goal of trying to intervene at different points in that woman's life, it's to try and minimize the chance that later in life she's burdened by something that was preventable or avoidable that could really negatively impact her remaining years, or in the worst case scenario, could kill her. We're trying to minimize morbidity and mortality due to preventable causes of disease and we're using what we understand about hormonal physiology in women to try and accomplish that goal. I think you could take out woman and put in man, change all your pronouns however you needed to and make the same statement, and the only part of it that I would have to sort of caveat would be we don't understand it as well in men. I don't feel like I have the research underpinnings to tell a man in his thirties that he is more or less likely, for example, to develop prostate cancer, a disease that's very, very common in men, 200,000 cases give or take every year in the United States, that he's more likely to get it than a buddy of his who's the same age or than a brother who's three years older than him. Relatedly, to go back to your point, the issues that men are coming in to see me for speak to their risk of other diseases that we have to be vigilant and catch, but the separate question of accurately predicting who's going to be most burdened by their aging, we need to be doing a better job doing that research and then coming up with a systematic way to approach those particular issues that we're finding over and over again in similar men. So it’s the number one reason I would make a loud argument, hey, this is important. It's because from a public health perspective, I'm talking about 50% of the patients in the United States.

LuAnn Heinen:
A hundred percent. That really resonates. Also, the gap between men's and women's life expectancy is higher than it's been. It's almost six years now and it's going up.

Dr. Joseph Alukal:
Certainly we saw a decrease in average life expectancy during the pandemic. That wasn't surprising given the pandemic, but it certainly wasn't anything any of us expected to see in our lifetimes. We just sort of assumed that health was progressing forward and as it made progress, we were going to expect that we were all going to live longer. And here instead you have this event that just completely upended that. But on the other side of that event, we're still dealing with the aftermath and I think the gains that men had experienced in terms of preventive care, participating in their care with their doctor, a lot of those gains got really significantly eroded. That number came out not that long ago. The life expectancy of men in the United States is now down to 73 years, unless I'm wrong, and women are, I think at 79, and so that gap of 6 years, that's bigger than it had been pre pandemic. But at the same time, we have data from the National Cancer Institute, the only cancer that there's been an increase in diagnosis, stage of diagnosis is stage four. That means that cancer has spread to a significant extent throughout the patient's body. Prostate's the only one where that's gone up in the past 10 years. We're getting a lot of stuff on these sort of fundamental public health questions for men. We're getting a lot of stuff wrong. If it's half our population, if we're spending money on it, before you get to the emotional appeal, I would just say logically speaking, we should be trying to answer some of these questions in a better fashion than we have been to this point.

LuAnn Heinen:
What are your future predictions? What do you think may happen and/or what would you hope to see in the next five years?

Dr. Joseph Alukal:
Well, we've talked about it forever, but I think one of the treatments that would really be able to revolutionize fertility medicine, both for male and female patients, would be a way to make gametes from stem cells. If I could make sperm or eggs from stem cells that I isolated from a patient, either from their blood or from some other source, I've offered a whole group of patients who right now have sort of untreatable fertility problems. I can offer them new treatments. I don't think that's impossible and I do think stem cell medicine is getting us

closer and closer to being able to make that a reality. But do I know when we're actually going to be ready to offer that treatment to patients? I don't know when it will happen.

LuAnn Heinen:
It will be big when it does. Thank you so much. I'm taking away a lot of learnings from this conversation. I really appreciate it. Wonderful to be with you.

Dr. Joseph Alukal:
Thank you.

LuAnn Heinen:
I've been speaking with Dr. Joseph Alukal, a urologist who teaches and practices at Columbia New York Presbyterian. He's an advocate for increased research and focus on male fertility and men's health generally.

I'm LuAnn Heinen, and this podcast is produced by Business Group on Health, with Connected Social Media. Whether you're a regular or first-time listener, if you like the show, please consider rating us and leaving a review.

**The name of the world's first IVF baby is Louise Joy Brown.*