



# Fiona Wood Public Lecture Series

## Fatty liver— why it matters, and what you can do about it

By Dr Koya Ayonrinde, Liver specialist (hepatologist) at Fiona Stanley Hospital

### Introduction

This podcast is brought to you by the South Metropolitan Health Service where we share interesting conversations about health to inform, educate and inspire our community.

We respectfully acknowledge past and present traditional owners of the land on which we are recording today, the Noongar People. It's a privilege to be on Noongar Country. This episode was recorded as part of the recent Fiona Wood lecture series on Fatty Liver — why it matters, and what you can do about it. The lecture was presented by Fiona Stanley Fremantle Hospitals Group Liver Specialist Dr. Koya Ayonrinde.

One in three Australians has fatty liver disease and may not even know it. Koya will cover what fatty liver is, how anyone can have it, regardless of lifestyle and how you can prevent and reverse it to live a long and healthy life. We hope you enjoy this podcast.

### Presenter

Thank you for joining me and the hospital series with this lecture this evening and taking time out for that. So essentially, I'd like to start off, you know, looking at the relationship between knowledge keepers and knowledge sharers, which in this situation I think has doctors and researchers would need to be not only knowledge keepers, but also knowledge sharers and knowledge transferers as well, so that the general public can actually benefit from what we know and the contributions that they've made to knowledge and help and that brings me to a quote from the late Coolio that I will attempt to wrap.

They got to learn, but no one's here to teach me. If they can't understand it, how can they reach me?

If we as doctors and researchers don't understand our subject, we cannot actually reach the general public with the information they need in order to manage their health.

We've heard a lot about fatty liver, what it is, what it is not. And I'd like to say from the onset that it is not merely an observation that has no implications for health. It does not mean that everybody with a fatty liver eat too much junk food, nor that they drink too much alcohol. It doesn't mean a person is fat, even though it is called a fatty liver.

It is excess fat accumulation in the liver and not describing the person. It is not only seen in adults, it's also seen in children as well, as I will highlight shortly. Now, there's a lot of medications that are advertised, bought and sold, and which are said to be liver fixers, liver cleansers and liver tonics that can fix a fatty liver. Well, guess what?

They don't work. So, what exactly then, is a fatty liver? It doesn't take much to develop a fatty liver. So, the definition of a fatty liver is when the liver fat does get up to 5% or more of the liver cells. So, a small amount of liver fat is normal, but as it continues to increase, then it becomes abnormal accumulation that can progress to fatty liver, which is also recently called a steatotic liver disease.

Little amounts of excess fat in the liver do not have much significance or consequence, but larger amounts of liver fat do. So, it's when you get into the moderate to severe end of the spectrum that the risks of type two diabetes, cardiovascular disease, liver cirrhosis and all that do tend to develop, and they don't happen within a few months of the that usually take decades. So, it's not unusual for people like myself to come across people who already have liver complications and who say that they've known for the last two or three decades that they've got a fatty liver. But they were reassured and told, don't worry about it, it's just a fatty liver. So, I hope by the end of tonight we'll have a better appreciation of when it matters and what matters.

There are stages of a fatty liver which will relate to both the amount of liver fat as well as the presence or severity of liver fibrosis or scarring as well. So it very well goes from a healthy liver to one which might have a bit of excess of excess fat that's a fatty liver, and often number of years with chronic inflammation and attempts of the liver to repair itself and scar tissue deposition, that's one that's liver fibrosis, which is and when we're talking about non-alcoholic steatohepatitis or NASH, and then from there some people will go on to develop liver cirrhosis.

In the early stages of cirrhosis, even from a fatty liver, there is still some opportunity for regression or improvement. And not only the amount of liver fat, but the information and fibrosis as well. And so what anybody can really hope or aim for is if they've got a fatty liver to be aware of it and interventions, whether it be lifestyle or emerging treatments or trials before it gets to that stage.

Now, this might surprise most people in the room here, but fatty liver is actually not a new disease. This slide is bit busy, but I'll just talk you through a little part of it. So back in 1836, Thomas Edison discovered fatty liver in people who consumed excessive amounts of alcohol. Soon afterwards, fatty liver was actually described even in children who were said to be overfed.

There's been a lot of other publications in regards to that over time. I will point you to George Budd in 1857 who described a fatty liver and people who were said to live indolent lives. And why don't we use more compassionate terms these days, in terms of the amount of physical activity and then also the amounts of food consumed as well.

But he did have some suggestions for treatment of the fatty liver, which, to paraphrase him, what he said at that time was if the person would but rise early and take active exercise, consume less fatty food, consume less food, less sugar and less starchy carbohydrate. That sounds like what I would have told you two days ago.

So, you know, you heard earlier that I did a PhD on fatty liver. So, I did all that rigor of work on a PhD just to find the half of what I discovered had already been known for 180 years. So, the association with diabetes is also not new. So, as you'd see over there, there had been an association between fatty liver and diabetes in the early 1900s as well.

And a lot of what we're talking about, part of it is not new, although we're learning more and more about it. The reason why fatty liver matters a lot now is because it is so much more common, because generally we're putting on more weight, there's more obesity, there's more diabetes and all that. And in fact, there are several studies that have suggested that some weight gain of more than ten kilograms after the age of 20 is likely to result in a person having a fatty liver. And so I think that would be most of us.

And so back to old George over here. He did have some good suggestions to live by.

So with all that was already known about fatty liver, why does this still matter so much today is for the reasons that I mentioned earlier. And so why has it been ignored for so long? Is it that we're feeling that our colleagues and others of past did not know anything? I guess that's what our children would feel about their parents that they don't know much.

But, you know, it has become very important because it's now linked with a number of other conditions. So effectively, fatty liver does not walk alone, as people from Liverpool would understand.

The new name for fatty liver is steatotic liver disease. But I'll stick with fatty liver for now. The reason for the change was to remove the stigma relating to body shaming in regards to the term fatty and also the word alcoholic as well. There's three main types of fatty liver based on alcohol consumption. So, in people who don't consume any alcohol, a very minimal, there is a metabolic dysfunction associated steatotic liver disease- it's a mouthful. And then that relates to having excess weight, but mainly the waist size, diabetes, high blood pressure, cholesterol problems. And then the metabolic combined with alcohol is the metabolic and alcohol type. And that's just the addition of moderate alcohol. And then going on to alcohol associated liver disease, where the burden of risk is mainly alcohol, more so than the other metabolic things.

So why it still matters a lot today is because in Australia about one in three adults has a fatty liver, about one in eight teenagers and about one in ten children, whether they know it or not. So 60 per cent of people living with obesity or type two diabetes will have a fatty liver. And we can predict that even without doing a blood test or a liver scan, about 5 per cent will develop the more dangerous form which has inflammation and possibly some fibrosis. And that's what we call NASH or MASH. And one in 200 will progress to cirrhosis. One in 5,000 will develop liver cancer. So these often don't happen when people are still young and in their prime, but often as people do get older into the middle age and beyond. The risk of developing type two diabetes and cardiovascular disease is also doubled.

And in people with a fatty liver, the main cause of death is usually cardiovascular disease. Things like a heart attack and all that. So whichever way we look at it, it's not something to simply toss away, particularly if there is a lot of liver fat, if it's just a little bit, it doesn't matter so much. I think this was an editorial from a journal a few years ago that I think captured a lot of what we're talking about, and that is about that risk of fatty liver first and then diabetes or heart attack coming a bit later on.

And so that emphasis or focus on the waist and that identification of if it's increased, looking at the other metabolic associates that do go with it. But it's important for us not to think of this in too much of an academic sense as if it's something that only happens in the US or Europe or elsewhere. Here's a snapshot of this health service a few years ago.

What you'll see here is that about 17 per cent of adults aged over 25 had cholesterol problems. 65 per cent of children had insufficient physical activity. 10 per cent of adults smoke, nearly 20 per cent have high blood pressure, 26 per cent over the age of 16 consume alcohol at high risk levels. And 70 per cent of adults were overweight or obese. So, we're really talking about a population at risk of having a fatty liver and the other bad company that keeps.

So, I'm tempted to say, but wait, there's more.

What you see here is his brain study. So, in 17-year-old teenagers a few years ago, 16 per cent of them had a fatty liver. This was linked with excessive weight going from but from the age of three, you could see a clear separation between those who are attracted towards having a fatty liver in their teenage years. It was linked with polycystic ovary syndrome and short durations of breastfeeding. So, breastfeeding for at least six months was found to be protective.

So those were the first live were heavier, more insulin resistant, had stiffer arteries even at that age and high-risk cholesterol levels as well. So found them up by the time they got to 33 years, 19 per cent of them had a fatty liver. And they're looking at their parents at the age of approximately 60 years, 38 per cent of the fathers had the fatty liver, 22 per cent of the brothers had fatty liver as well.

And amongst the parents who had a fatty liver, there was more diabetes and carotid artery blockages as well. We did a study here recently looking at fatty liver in children aged between five and 15. And what we found was 20 per cent of them had a fatty liver, 30 per cent of the mothers and 40 per cent of the dads. So, what this is all showing is that it's not an individual thing.

Often if there's one person in the family who's got a fatty liver, that's a family that has metabolic dysfunction, whether it be fatty liver or diabetes or high blood pressure or other cholesterol problems. And so if you look at that at a community level, you can see why the community is at greater grave risk.

So, heading a bit further south. So, the Busselton Health study, we've also found that adults who had severe fatty liver over the age and who were aged over 50 had more heart disease and also shorter life expectancy as well.

These are some of things that do occur both under our control and outside of our control that do contribute to risk of a fatty liver. And part of it is our nutrition, part is physical activity or lack of physical activity and alcohol. And there's also other things like inherited genes that we can't do anything about whether you belong to the lucky sperm and egg club or not. And sometimes gut bacteria also can have an influence as well.

In children in particular, and I think this goes for adults as well, avoiding obesity is a major form of preventing a fatty liver. And that is quite important because even though we've been taught over the years that children are not just little adults in the metabolic world of a fatty liver, children actually are behaving like little adults because those with a fatty liver are often already, sometimes even at the age of seven or eight, have high cholesterol. They might have a blood pressure, which even though looking normal is higher than that of their peers and they might have other abnormalities already at that time.

So, these, you know, issues don't develop when we turn 40, but actually do progress over time. So, while not one not demonizing apples, burgers, chips and donuts as I practice my ABC, the fact still is that I'd be bold enough to say, give me a child until he's seven and I will show you the man with a fatty liver.

So, the apples and pears. I'm not sure what your favourite fruit is, but the apple body shape is that which is most likely to be associated with having a fatty liver. Whereas that's the upper body type of fat distribution. The lower body type is actually more protective. So that's having more weight around the hips and all that. So, you know, part of the message there is to not feel uncomfortable in thinking that my hips are too large and need to do something about them because that's actually the more protective and healthy body fat distribution as long as it's not associated with excess fat inside the abdomen as well.

And I well, there's that one which big hips little tummy. There's no fatty liver there. Right. So, but so where do we begin. So, as you said in Alice in Wonderland, begin at the beginning and don't stop to reach the end. So, looking at pregnancy for fatty liver in pregnancy is also important. We don't know yet how common it is, but it's not great for the woman nor the baby.

About 50 per cent of women go into pregnancy already overweight or obese. And what that means is that a proportion of them are actually starting pregnancy already with a fatty liver. So, in pregnancy, a fatty liver increases the risk of gestational diabetes. We see a lot of that in this

hospital. It increases the risk of future type two diabetes and also of cardiovascular disease in the future as well.

So, all these are happening years later. But, you know, pregnancy can really act as a window to a person's future metabolic health. It can result in transmission of risk of obesity, type two diabetes and instant resistance to children as well. So, the mother is obese. There is a higher risk that the child could also develop diabetes. And if the mother's obese or has a fatty liver, there are instances where the foetus before it is born having been exposed to that same environment, is actually born already with a fatty liver. And that portends a dangerous outlook going forward.

I've been thinking about this for a while and we know that many people don't really, including doctors, don't understand enough about the fatty liver. And as I said before, too many people have been unnecessarily reassured without quantifying the liver fat and all that.

So, in our studies we did, you know, years ago, we sought to engage people who might have the Nash form, which is the more dangerous form with inflammation and by birth into clinical trials, because we know there's a lot of fatty liver out there, we know there's a lot of Nash out there as well. But guess what? We were not getting referrals, so we did outreach to the community directly and that's why I'm glad for this opportunity and what we found was, you know, individuals were actually very much interested in knowing whether they were at risk and if they had Nash wanting to participate in trials, which might help with that with a disease.

So, we presented a summary of this at the European conference that we titled who cares about Nash. And the response to that is patients with fatty liver do care. So how do you diagnose it? Well, we talked about the BMI earlier on. The body mass index is useful, but it doesn't tell us as much of the waist circumference does.

As far as the waist circumference matters, there is a contribution from fat on the outside, fat on the inside, and also the combination, but it's really the fat on the inside that matters. Blood tests are also used, and many people have heard about the so-called liver function tests, or LFTs. They're useful, but they don't tell you enough.

They don't tell you whether there's any fibrosis or scarring. And indeed, and concerningly, about 40 per cent of people who have cirrhosis, that is where the whole liver has some scarring can actually have normal liver function tests. So you know and the other issues to look at would be the blood sugar, cholesterol and blood counts and of course, the blood pressure.

And they come to the actual diagnosis with liver scans. So most commonly used is ultrasound. And then fibroscan is another technology used as well. So the ultrasound technology is now embed test for the amount of liver fat as well as for fibrosis. And even though MRI is better for both, it's expensive and not very available. So what is generally measured in these is the amount of liver fat, because the more the liver fat, the higher the risk for diabetes and other complications and the higher the liver fibrosis, the higher the risk of cirrhosis of the liver cancer.

It also checks for complications that may have developed as well. So, on the left is a fibroscan picture and on the right is just an ultrasound.

It's important to note that all is not doom and gloom. Fatty liver is reversible if it is diagnosed early enough.

So, how do we improve things? Firstly, is having a healthy weight.

What we want to do is if a person is overweight or obese, your strategy is to get the weight down. Weight loss of 5 per cent or more can reduce the amount of liver fat. Weight loss up to 10 per cent can reduce the amount of liver inflammation with a fatty liver and weight loss of at least 10 per cent sometimes actually does improve or reduce the amount of scarring.

When you hear it said that the liver can be forgiven and attempt to heal itself, it is true. That process of inflammation and scar tissue deposition is actually, you know, a battle between the forces of good and evil. So, the liver is trying to heal itself. And in that process is where the scar tissue is. Scar tissue deposition does occur.

You want to also avoid or treat diabetes. If we can avoid to treat cholesterol issues, if there is to reduce heart problems and, reduce, therefore liver cirrhosis, liver cancer, and hope to live longer as well.

I did have somebody once say to me that it was the Uber delivery guys that were responsible for his weight and the fatty liver. That's you know, the most excited guy was walking to the door to receive his delivery. That said, what we really want is nutrition change. I'm not calling it a diet because I know people have all different types of ideas about diet. So I want to reduce fatty foods, reduced sugars and refined static carbohydrate just like what George Budd said in 1857. What has been recommended predominantly is a Mediterranean diet, and that's been proven in various studies as well. That said, any diet does help, you know, as long as it is safely done and maintains adequate nutrition and of course limiting alcohol. Physical activity is important. So we've got to shake off some of some of the weight.

Compared with our great grandparents' generation these days the only way we can achieve that level of physical activity is by deliberately undertaking exercise. that can be aerobics or anaerobic. That's a resistance exercise. The combination is much better than either one on its own. It's suggested that high intensity interval training is useful, of course tailored to the preference and ability of the person. There are different reasons why people either cannot or will not exercise, which might be they've got other medical issues, they've got pain, they're tired. They might not enjoy exercise or just not know what to do. And sometimes there's just really no genuine excuse. About 150 minutes of exercise a week that's moderate and half that time can be done as more vigorous activity is useful come into treatments and the objectives of treatment. So, in Australia there's no approved treatment for a fatty liver.

The lifestyle changes are recommended for everybody. We do know that in spite of the efforts of lifestyle changes, less than 20 So of people are able to sustain this long term. And so any additional efforts or input sometimes does help. It reminds me of an older advertisement, and I'm not advertising anything here. The MasterCard advertisement did say that there's some things that money cannot buy, and for everything else, there's a MasterCard.

In this instance, there is some things that can be achieved by lifestyle changes and, you know, physical activity and all that. But there's other things that do require medication or other treatments. Some treatments that have been studied but not routinely in use are vitamin E, they a bit of colic acids and our trial was unsuccessful for that, but people hear about the three fatty acids as well. It's been suggested by some, but not in routine use.

If a person has cholesterol, issues should be treated. Diabetes should also be treated as well and weight loss as well. It is attractive that if a person has got both overweight, obesity and diabetes, that medications that benefit both, you know combined would be attractive. Coffee- if a person drinks coffee, you don't need to stop it because there is some benefit although we don't prescribe coffee per se. But if you're drinking it, don't stop.

Milk thistle is also okay. Not smoking, no excess alcohol is also important. And then of course, there's clinical trials for those who already are in trouble with Nash, that is with liver fibrosis or getting on to cirrhosis and all that.

There's also the question of weight loss. In bariatric surgery, does it work for fatty liver? The answer is yes. However, it's a bit drastic for fatty liver on its own. But if a person does have obesity,

possibly with diabetes and they're having it for that reason, then yes, it does improve the fatty liver as well.

I'm going to make it a bit more personal now and that is reflecting on it for myself.

I believe that what is good for me as a liver specialist might be worth considering for others as well. I say if I had a fat liver, what would I want? So, if it wasn't diagnosed yet, but I was obese or diabetic or had gallstone disease, I would want somebody my GP or somebody to screen me for fatty liver.

If I did have a fatty liver, what I would want is for my GP to explain to me what a fatty liver is and also to, you know, to assess whether I might have fibrosis or scarring. So, fibrosis scarring is most common after the age of 40. I'm not giving away my age here, but the simplest test that would be recommended to start off with would be a simple blood calculation on the food for Fibrosis score, which uses age, the liver function tests ALT and AFT and the platelet count.

I would want to have the count and fibroscan not just to measure, not just to say what I've got Fatty liver. Yes or no. I would want to know how much fatty liver is there? Is this severe or moderate? or is it only mild? I would also like a fibrosis test done with it to tell me is there much to worry about yet with fibrosis or not?

And if I was having weight loss surgery or gallbladder surgery, I would hope that the surgeon would have a look at my liver with an ultrasound first and decide whether it is worth and a liver biopsy at the time.

Fine, let's. I'm asleep to give me some idea. Is there much to worry about or not? And this is because I know that the longer I have severe fatty liver, the higher is my risk of developing type two diabetes, heart disease, Nash and cirrhosis and liver cancer.

I would also want screening for diabetes because having a fatty liver means I've got double the risk for diabetes and then also testing for high blood pressure, cholesterol issues and also respectful discussion about my waist circumference and my alcohol intake and exclusion of other liver disease as well. I'd like to have some assistance by the GP, possibly a dietician, an exercise physiologist about weight trying to get my waist circumference if I was female, down to about 80 or male under 94.

I know that's difficult to achieve and so grateful for any help that I could get.

But I also know that even if I don't get to 80 or 94 centimetres every little bit does help. If I'm diabetic and had weight issues, I'd like a treatment that would possibly benefit both and also treatment for high blood pressure and cholesterol if it was needed.

I'd like a referral to liver specialist. If I suspected or know to have liver fibrosis or that scarring or cirrhosis. And I'd also want to know, are there any clinical trials that I can benefit from?

If I had a fatty liver and did not have any severe liver fibrosis, I'd want to have a repeat full for tests every one to two years and a fibroscan or ultrasound, fibrosis tests every three years to see if there is emerging fibrosis or problems to worry about.

And in fact, I'd like a copy of my blood test results. The score is an easy calculation. I can do it myself and knowing that if things did look like it was getting to the red danger zone, I could ask my GP to send me to a liver specialist. But I would also want to know is there a risk in my family?

So things like diabetes, cirrhosis, cardiovascular or heart disease and liver cancer as well, Because if there is the heightens my risk of developing it myself. So I'd want anything possible to flatten the curve. I wouldn't want my fatty liver to be simply dismissed as nothing to worry about, but actually better understanding of the potential risk that lies ahead.

So, just to wrap up so fatty liver, we now know is not a new disease, but it's now a very common. Healthy diet, exercise and weight loss can help. Fatty liver does not work alone. Good control of weight, diabetes cholesterol, high blood pressure is recommended. Lots of medications are under trial and hopefully we will in the next few years have something that can treat fatty liver with.

But it's complicated with fibrosis. Some people need bariatric surgery, but not just for the fatty liver and the good old supplements herbs, detox don't work there waste of money.

So just to wrap up here, in 1949 so Harold Hemsworth did declare that fatty infiltration is normally regarded, in itself, as an innocuous condition. But recent work indicates that is not so.

So, the saying here as well that the last 180 years have shown us really that fatty liver is not a benign nothing, but it is something that we should want to have whatever early interventions to reduce the amount of liver fat.

Thank you.

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