with Norman Swan
Monday 14 July 2003

Anorexia and Bulimia Nervosa

Summary:
Anorexia and Bulimia Nervosa cause very serious health problems in young women. Only a very small percentage of sufferers are male. **Dr Per Soedersten** from the Karolinska Institute in Sweden talks about new methods of treatment for these conditions.

THIS PROGRAM WAS FIRST BROADCAST ON 23rd JUNE, 2003. IT IS BEING REPEATED DUE TO EXTREME POPULAR DEMAND.

Transcript:

Norman Swan: Today on The Health Report, we go to Stockholm, where a researchers and clinician has revolutionised the treatment of anorexia nervosa and bulimia.

Per Soedersten goes back to basics, throws out psychiatric theory, stops drugs and reckons it's all explained by progressive starvation and the profound changes to hormones in the brain which follows. And his therapy is just about the only treatment for anorexia proven to work in a scientific trial.

Per Soedersten is Professor of Behavioural Neuro-Endocrinology at the Karolinska Institute, which is where I visited him. His research interests used to focus on rats and how hormones work in their brains.

Now normally when I do an item on anorexia nervosa or bulimia, I speak to a psychologist or psychiatrist. What's a hard core biological doctor, albeit a flamboyant one, doing in a field usually held up to be psychological?

Per Soedersten: Yes, that's a very good question because it struck me recently that brain research on obesity and overweight is actually 100 years old, and so far it's not contributed to the management either of the anorexic or the overweight. That's amazing. But I think clinicians have a lot to learn from basic neuro-endocrinology and vice versa.

Norman Swan: Essentially we're talking about brain hormones.

Per Soedersten: Yes, exactly, but those who are engaged all the time in brain hormones actually have very simplistic ideas about anorexia. They really need to interact with clinicians, and clinicians really need to interact with basic researchers.

Norman Swan: So take me through the history of anorexia, because you believe that some people got it right, in years gone by.

Per Soedersten: Yes, exactly. As I mentioned, it's a very old phenomenon. The first medical description is from 1689, pointing out the hypothermia and the obsessionality of the patient.

Norman Swan: They were feeling cold?

Per Soedersten: They are cold, for a simple reason: they don't eat enough, they cannot generate heat, and then they get hooked up in obsessionality. They cannot expand their behaviour or repertoire, so they do same thing over and over and over again. That's the first description. Then we go back to 200 years ahead into 1874. A physician in London, gives the name 'anorexia nervosa' simply to implicate the involvement of the brain, and he is successful in treating the patients. Of course we don't know precisely how he managed his patient, but he reports a success in treating the patients by supplying them nourishing diets, slowing them down. The pointed out the second thing: excessive physical activity.

Norman Swan: So people with anorexia nervosa, and bulimia are over-active.

Per Soedersten: They are physically hyperactive.

Norman Swan: How does that manifest itself?

Per Soedersten: That can be actually running. It's very common among the athletes. Running all over the city at night, long, long walks, and many of them have a background in elite sports, and sport activities. But as they approach a lower BMI, you get more and more of less and less, so eventually they will move their fingers like this, or just tap their toes –

Norman Swan: So as they lose weight, they actually lose the ability to have gross over-activity, so the hyperactivity is just slight movements of the head or hand.

Per Soedersten: Of the feed or hands, right. And then this English doctor also noticed the hypothermia, and he said it's often necessary to supply external heat. And now as a neuro-endocrinologist, I know that these phenomena can easily be modelled in rats. Rats for example, with a restricted food intake and availability to run in wheels, will run themselves to death; they run more and more and more. They don't do that if you warm them, they stop running and start eating. This is why we supply external heat to our patients. And then after 1874 there have been 15,000 or 20,000 papers on anorexia. Interestingly, the only one on hypothermia, and very little has come out of that as far as management of the patients is concerned. So the clinical situation has remained poor for the last 50 years.

Norman Swan: And as we discovered in an interview on The Health Report just a couple of years ago with David Ben Tovim in South Australia, nothing works.

Per Soedersten: That's what he said. That's partly, essentially that most things don't work. It is not true, it's not really true. Family therapy in young anorexics works, it's a small effect but it's been demonstrated in three randomised control trials. It works, but it's a very small effect in my lean patients. But in bulimia of course, CBT, cognitive behavioural therapy works, but only in half the patients. Recent reports have reported a sadly high relapse rate: between 35% and 45%, which is of the main concern; among young anorexia relapse is the main problem.

Norman Swan: So give me the statistical picture, before we come to your hypothesis. Give me the statistical picture out there in the big bad world, not this clinic necessarily, about anorexia, bulimia, and the statistics.

Per Soedersten: Well the chance of recovery is less than 50% ten years

after you develop anorexia nervosa. The chance of becoming a chronic patient is 25%, and there is a sad high mortality, ranging between 0% and 20% in the reports in the literature. It has not changed much.

Norman Swan: Give me how you've interpreted the data and what you think is going on as a hormone person.

Per Soedersten: Not only a hormone person, because I interact with, over the last ten years, daily with patients, and discuss with them all the time. It's very clear to me how this starts is always by a reduced food intake, that's obvious. After that, there is always an increase in physical activity, easily demonstrated in any animal laboratory, not only mammals, in birds, everybody does this. For a very simple reason: if there is shortage of food, you need to be active to go out and look for more food. If there is not enough, you remain hyperactive to search for more food; this always happens.

Norman Swan: An evolutionary reaction built into it?

Per Soedersten: Yes, we are built to meet the demands of starvation. Oversupply of food is a recent phenomenon and we have no mechanism to save us from that extremely dangerous situation. We eat because there is food, we eat and eat and eat, and get obese. But we are built to meet the demands of starvation, and so I wonder on occasion whether anorexics are not the ones who are really the best suited to meet the demands of evolution. Anyway when this happens, dopamine neurons in the brain start getting active, and those are the reward neurons. It feels good to starve yourself a bit. It feels good to move more, so it's rewarding, it feels good to embark on what might develop into an anorexic career. The other neurons that are activating the brain are those concerned with attention, they're also activated. So when you starve –

Norman Swan: You become more alert.

Per Soedersten: Alert, and conditions for learning something are optimal because the reward pathway is active and you are alert, you can pay attention. So anorexia develops with us because it's rewarding, and you learn what situations are rewarding and it's maintained because your behaviour gets conditioned to those situations.

Norman Swan: So, Step 1, you reduce your eating, for whatever reason. Somebody tells you you're too fat.

Per Soedersten: Exactly. Someone from outside tells you. It's always the case, it's often the trainer in the sports scenario, or it can be the church in the old days, it was God who said it was a sin to each too much, right. Or it can be a fashion expert in Paris who tells you should reduce, the movie start in Hollywood, for whatever reason. Someone outside of yourself tells you to reduce your weight.

Norman Swan: So take me to the next step in the theory.

Per Soedersten: That's rewarding, it feels good. And then you get compliments from your surroundings, you look better, and then you say, '

I might as well reduce my weight a little more', and then what is rewarding switches to what is not so rewarding. The transition between those states is not unknown, the reason for that. No-one who works on the neuro-biology of dopamine neurons can explain that. Why it's first rewarding, and then it turns to the opposite. So eventually, anorexics will say that 'I have to move a lot to get rid of my inside', because they always develop

depression, anxiety and obsessionality, as they starve. Many people believe, and some people recently have launched the idea that obsessionality causes anorexia. We say it's the other way around. We know that when you start to get heart problems, you get hypothermia, hyperactivity, everybody believes.

Norman Swan: You mean the heart problems you get with anorexia?

Per Soedersten: Exactly. No-one says you get anorexia because you have heart problems, but they say you get anorexia because you have obsessionality. Why would that be? We say it's the same with the psychiatry, also develops as a result of starvation. I think most people agree with that now. For example, it's known in the literature now that as starvation is enhanced, so are psychiatric symptoms enhanced, and as starvation wanes away, psychiatric symptoms wane away. And those who say that anorexics in remission still have psychiatric problems, they simply have found that because they have poor treatment. If you treat them better we feel that psychiatric symptoms will wane away, without support of any drugs.

Norman Swan: OK, so for some reason which nobody knows, they get locked into it, they're stuck.

Per Soedersten: Yes, that's exactly right. And that's true for anything that you get stuck into, be it nicotine, heroin, coffee or whatever, no-one really knows why get stuck and some don't.

Norman Swan: And that position is being stuck is very toxic, toxic socially as well as biologically.

Per Soedersten: It is indeed. Last but not least, these people get severe social problems and they are as important to treat as anything. They lose time in school, they're absent from work and they lose friends, they get very isolated. Bulimics start to steal money to support their eating behaviour, and so they can be caught by the police.

Norman Swan: And you believe bulimia and anorexia nervosa are essentially the same problem, with different manifestations.

Per Soedersten: Yes. Actually when it was first described in American literature in 1979 it was actually called a special form of anorexia, but it was described 200 years earlier by the doctor of the King, Gustav III in Sweden. So obviously it's not an apparent condition, because they are all of them a normal weight, and they do the behaviour in secrecy. And I have a colleague in gastroenterology who described the bulimic patient in 1970 before there was a diagnosis, and he had to do a lot of clinical and detective work to find it out.

Norman Swan: And just sticking with the hormone theory, there's also some evidence that one of the hormones in the stomach which helps to tell you to stop eating, if you've got too much of it, you can cause anxiety.

Per Soedersten: Yes, that's how we started. But you can simply say that whatever is changed biologically in anorexia, is a result of the starvation. There is no hormone you can measure in the population of girls, all 95% of these patients are girls, and predict your chance of developing anorexia. All of the biology that so far has been described, is a result of starvation, and it's not different in anorexia as opposed to other states of starvation, with one interesting exception, in fact they don't catch infections. Starved people can catch infections and they can die from that, but anorexics don't catch infections, they don't catch the common cold for example.

Norman Swan: Just before we get onto treatment, you also believe that this effect on the dopamine in the brain can make them almost psychotic as well. Can you describe some of the bizarre behaviours you get with these people?

Per Soedersten: Yes, many of the patients that are referred to our clinic, I think 30%, 40% have a psychiatric diagnosis, like psychosis or something like that, and that's not unexpected. A long time on dopamine hyperactivity will cause these things, that's a very standard 40 year old theory in schizophrenia.

Norman Swan: Just tell me what you were telling me before, you also talk about the problem of the external cues in the environment that they'll get which can lock them in too.

Per Soedersten: Yes, in a way we live in boring times because everybody believes there's a gene for this and a gene for that, and in that time it's a very simplistic world. I think clinicians are getting more and more to realise that the environment exerts a powerful influence, even on brain anatomy. I'm fascinated by that. But also in the state of emaciation, the behaviour of the anorexic is controlled by that state, and also their environment. So when you place an anorexic in a non-anorexic environment, she will behave anorectically. This was actually pointed out in the late 19th century by the pioneer neurologists, that they actually removed their patients from the environment in which they displayed the symptoms.

Norman Swan: It can be pretty tough if that environment's the home.

Per Soedersten: Well yes, but we actually have the mechanism to do that, we have apartments across the bridge here, and we have all sorts of apartments, because we think it's essential. You should learn to eat in a new environment because in the old environment, that in which you develop anorexia, will maintain the anorectic behaviour. It's an obstacle to clinical progress.

Norman Swan: And you also describe how it's probably easier to treat kids who've developed it through their sport.

Per Soedersten: Yes, sure. For the same reason they develop it in the sport scenario.

Norman Swan: Give me a typical scenario.

Per Soedersten: That would be swimming, athlete swimmers. And the life works if swimming works, and if you develop anorexia you will perform poorly in the pool, and therefore you will drop out of the athletic environment.

Norman Swan: This is like the adolescent girl who gets a bit rounder and her times go down and the trainer tells her to lose some weight.

Per Soedersten: Precisely, and that's always a man who has little understanding for the problems of anorexia. It's like a trigger. Once they are hyperactive, that's one condition which predisposes you for anorexia, and the other one is reducing your intake. It's like a trigger, they simply lose control of the system, and very rapidly develop anorexia. And out of the sports world they go, and in a way it's a good thing.

Norman Swan: Because you're out of that environment.

Per Soedersten: Exactly.

Norman Swan: OK. Take me through how you then treat these young girls.

Per Soedersten: They come in here for one-and-a-half days, they get through a very careful clinical examination, and they're then divided on the basis of the severity of their disorder. About 30% are treated as in-patients for an on-average 25 days, it's medical treatment. And the other ones are treated as out-patients. Four things: training of eating, with computer support, warming, in warm rooms; slowing down the physical activity which is the really important thing to do. I think the warmth will do that. That's the third thing. And the fourth thing is restoring their social life. For that we use teachers, hairdressers, dentists and housing officers.

Norman Swan: So let's have a look at how you train them to eat. Just take me through that before we go on to this little computer you've got up here.

Per Soedersten: We train them to eat, using computer support. That's a scale, lowered in the surface of a table.

Norman Swan: So let's walk over and have a look at that. Tell me what you're showing me here.

Per Soedersten: This is a scale connected to a computer. You put a plate on the scale, and then I put food on the plate. You eat from the plate, and the computer records the way it looks on the plate.

Norman Swan: This is just a little red plastic disc effectively.

Per Soedersten: It's a scanner. And this is what the patients see. Put an empty plate on the scale, Maria, can you do that? And then you press here.

Norman Swan: This is a little computer screen here in a red box.

Per Soedersten: Yes, and then you put the food on here, and you can see there the sign will increase until you get up to these artificial –

Norman Swan: They're all very plastic looking cherries.

Per Soedersten: Then you're ready and you press red again. And then what you see –

Norman Swan: This is a touch screen we're looking at here.

Per Soedersten: Right. And here's one line on the chart, it's green, and that's for eating, right. This is how quick you should eat. And the red line on the screen is s-shaped, that's how you should feel your satiation emerging during the meal.

Norman Swan: So what's on this touch screen is a graph with a green line going down from left to right, from high to low, and a red line going up meeting that green line which is, as you say, when you should feel full, and in front of you is the plateful of food on this little scale attached to the little computer.

Per Soedersten: Exactly. And so the patient starts this.

Norman Swan: And that's traffic lights.

Per Soedersten: Yes. Start that, and then you can see indicate your level of satiety. Press here, and say this is how full I feel.

Norman Swan: No, not very full.

Per Soedersten: No, and that's ready. And that should match to the red line here, so it's a little too much you see, and then you can see the green line emerging here and that's your eating rate, and I don't eat anything, so that's, you see, nothing happens, it goes horizontal. But as soon as I eat something, you can see it drops a bit. So. There it drops. That's how quick I eat. And the patient should simply follow the red or the green line. Anorexics have a problem in doing that, because they eat very little and very slowly, and they feel full very quickly. So by these curves, they can practice eating.

Norman Swan: Through essentially you're eating with your eye on the screen to try and compete with the green line.

Per Soedersten: Not compete, no.

Norman Swan: Not compete, but match the green line.

Per Soedersten: Yes, match the green line, precisely. And patients want this rather dull looking picture because it gives them a completely unemotional way to control their eating. No mother, no-one there to argue with, and you see if you don't eat anything, it goes horizontal. As soon as you eat anything, it drops a bit, and you should simply follow the line. And then the computer will ask you how full you feel at regular intervals at one minutes. This display always looks the same. The amount of food you should eat is matched to what you previously ate. So an anorexic eating only 50 grams, will start practising to eat 100 grams. A bulimic who ate much, much more, will eat less, but it looks the same. It always looks the same.

Norman Swan: And how long does it take on average for somebody to match their eating to the green line?

Per Soedersten: They do that gradually, so once they matched one, it's another green line they have to match. More and more food in shorter and shorter time. But they will do this immediately. Very few say 'I don't want to do that'. Those who don't, will do it rather rapidly, they like this. Actually it was a patient who said that I want to use this machine to train, because I don't know how to eat, I don't know how to feel when I'm full. We planned to use it for research purposes. It was a patient who said 'Let's use this for training.' Sop this one is now installed in all the laboratories, but you can also get it in a portable version, so we are developing a portable version. And that's going to be – everybody's going to have one, on their back, to eat and practice anywhere. This one is portable but is a little heavy. The other ones are over in the blue bag there. So it's going to be available for anyone.

Norman Swan: And so what you do is, you raise the bar. So you might start this at a very small level of food, and then you'll actually adjust it for a bigger amount.

Per Soedersten: Exactly. But as I say, the screen always looks the same. So it doesn't look like a gigantic hill that you have to – it always looks like this, it can be, as I said, just 50 grams or 100 grams. It aims at teaching them 300 grams in 15 minutes. That's what you and I will eat. But this is as simple as that.

Norman Swan: And that's the main basis of how you train people to eat?

Per Soedersten: Yes, that's how we do it. Here we are again, so they are asked to do this, and they should practice how to. When I am in this state, I shouldn't really be more fuller than that. Right. So I should follow the red line here. You can actually adapt your physiology to lots of things. Remember Pavlov actually conditioned dogs' physiology to anything. That's what he found, to anything. And that's what the anorexics do. They condition their gastric emptying, their emotions, everything, towards some very strange things, which are very difficult to understand when you meet them clinically. But if you say That will dissolve as soon as your eating is normalised, that helps. And we reported our results. The next step is to transfer these results to the standard of care. We'll be happy if someone comes up with a better idea. The main aim here is to improve on the condition of the patients, nothing else.

Norman Swan: And that's all you do with training?

Per Soedersten: Yes, the training, the patient puts a plate on the scale. The computer records the weight of the plate. That yields a curved eating rate, and that's a low rate, a little food during a long time in an anorexic. Then we show her on the computer screen, a curve that has a steeper slope, more food during less time, and she's supposed to follow that curve. She can do that, because she sees her own eating rate emerge on the screen, and then she's asked to adapt to that. Similar for satiety. She's asked to estimate her level of satiety by looking at the scale and adapt her ratings to a scale on the screen. It was a patient who suggested that we use this apparatus, because she said 'I don't know how to eat, I don't know how to feel when I'm satiated.'

Norman Swan: So over what period of time does this machine work?

Per Soedersten: On the day of actually coming to the clinic and getting training on this machine, more or less immediately. Most of them do this rapidly, those who don't are made to do it by simply talking to them. And they do this daily, and less and less often, and they gradually start eating with others, and sooner or later they want to get rid of the machine of course, because you don't want to be the odd one out.

Norman Swan: And they do this for every meal?

Per Soedersten: They are supposed to do that now, because we developed a portable version. So far it's been the localised to the clinic. So they so far have had to come into the clinic.

Norman Swan: And how does the warming work?

Per Soedersten: It's a simple warm room. That's the problem. Actually North Face in California has developed a jacket, that's over there, that supplies warmth, that I'm now testing out. It's a very interesting apparatus. It is battery driven, and it supplies heat to the chest region. All patients have tried that once, and we are buying more and more of these. It's heat on demand, you can get warmth on demand, you can get it anywhere.

Norman Swan: It's essentially just a windcheater jacket you'd wear for skiing but it's got a built-in heater.

Per Soedersten: Yes it's actually been for those who want to climb the K2 or things like that.

Norman Swan: And you wear that 24 hours a day?

Per Soedersten: Yes, the batteries last only for five hours, so you have to recharge the batteries, but they really like this. Amazingly enough, there was a patient who was experiencing anxiety all the time. While she wore the warm jacket she said, 'Anxiety disappears out of my body as I get the warmth.'

Norman Swan: So, training for eating, warmth, how long does the warming last? How long do you do that for?

Per Soedersten: Well, hypothermia goes away as you gain weight, and you enter a normal BMI. And then they don't have to use it anyway any longer.

Norman Swan: How do you get rid of hyperactivity?

Per Soedersten: Well that's the trick. There's no pharmacological way to do that, but the warmth does it, so we think there is benefit also psychologically by the warmth. Also allow them to eat more, and also slow them down.

Norman Swan: And the social re-integration, how does that work? What do you do there, give me the tips.

Per Soedersten: We have actually a full-time teacher here employed by the clinic, and with hairdressers, dentists, and we also have a possibility for the patients to move to a new apartment. And that's more or less commonsense. I mean this is helping them back.

Norman Swan: So you're reconstructing in a sense. If they've got bad teeth, you'll cap the teeth, if they need a makeover, you give them a makeover.

Per Soedersten: Yes, exactly. The teeth are a big problem for the bulimics of course, so they can get dental bills, astronomic dental bills, and that makes them less likely to go to the dentist. Dentists also may not be experienced with a group of patients. Ours is. So that we are working with him and anyone who has a dental problem goes to this dentist.

Norman Swan: What are the medications, do you use any medications?

Per Soedersten: None at all, because the ones that prescribe simply don't work, it's as simple as that.

Norman Swan: And you think that the antidepressants that these kids often get put on, make it worse.

Per Soedersten: Yes I do in fact, because those antidepressants which are used are serotonin re-uptake inhibitors and serotonin is the transmitter in the brain and stomach which inhibits food intake, inhibits the pituitary gland.

Norman Swan: So the Prozac-like drugs you think produce the very hormone or chemical transmitter that inhibits eating?

Per Soedersten: Exactly. It's a very strange thing. Actually serotonin drugs are used to treat the obese.

Norman Swan: How many of your patients come in on SSRIs then?

Per Soedersten: Forty percent. High does, 60 milligrams, so that's a sad thing to see a girl on high levels of these anti-depressants, because they are like zombies, no emotional expression at all.

Norman Swan: OK, the $64 question: what sort of results are you getting, because you've in fact done a randomised control trial.

Per Soedersten: We did, yes. And the rate of remission is 75%, and that's full remission. Out of the 25% who do not go into full remission, half of those go into partial remission. About 10% or 12% do not get better. The risk of relapse is 7%.

Norman Swan: Compared to, what, 40%?

Per Soedersten: There is no proven treatment for anorexia, so we don't know how many go into remission because of the treatment. And in bulimia there is cognitive behavioural therapy, but only 50% of those patients go into remission. The rate of relapse in anorexia is 30% to 50% within a year, and recent evidence in bulimia suggests that 3%% to 45% relapse within four months.

Norman Swan: Are you results any different for people with bulimia versus anorexia nervosa?

Per Soedersten: No, we treat all those patients the same. The treatment for anorexics is a little more intense, so they come to the clinic more often. But we would not say bulimia is easier to treat, or not more different. The point here is that they can all be treated similarly.

Norman Swan: Expensive?

Per Soedersten: Half the price of conventional treatment. We actually have a statistician on economics who works on that now. We present evidence. We will present the data shortly. Half as expensive. And add to that, because these patients we're having do not relapse. If you relapse, you have to go to another treatment, another treatment, and another treatment. It's been estimated by an economist at Uppsala University that the average anorexic will cost Swedish society about $US400,000. And there are about 4,000 of those in Sweden, so the cost that this disorder imposes on the community is rather astronomic, it's a lot of money.

Norman Swan: So has anybody flattered you by copying you yet?

Per Soedersten: No, but now we just published this paper. I think many people want to come here. We have visitors from the United States, and from Holland and lots of people. We have also invited many American opinion leaders. They have all been very helpful, and I think now's the time that we can collaborate with these, and I'm sure we have a lot to learn from these people, not least from your Australian countrymen, we're happy to invite them. Actually I was about to invite one, Judith Proudfoot, who developed CBT by computer, individualised CBT. Good you reminded me, I'll invite her. She's does extremely good work. And everybody comes, and we'll be happy to help the people to our program; if they are interested in doing so we'll welcome anyone who wants to come.

Norman Swan: Dr Per Soedersten, at the Centre for Disorders at Huddinge University Hospital, which is part of the Karolinska Institute in Stockholm.

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And next week on The Health Report we'll be looking at the vexed question of whether you can ever label a child as a psychopath or sociopath.
Parents cast off at their children and make jokes about their behaviour. But some kids give everyone hell – and are often told they have Attention Deficit Hyperactivity or conduct disorder. But perhaps they can be labeled with more serious pathology.

It's highly controversial as you can imagine, but Professor Mark Dadds of the University of New South Wales has been looking at a measurable trait in children called Callous Unemotional.

I'm Norman Swan and you've been with the Health Report.

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