

Transcript

Let's talk e-cigarettes
Podcast 55 Suchitra
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Speaker 2: Jamie Hartmann-Boyce
Speaker 6: Ailsa Butler
Speaker 7: Suchitra Krishnan-Sarin

Musical intro

If asking your mate down the pub about vaping, here's what they probably say.
No one agrees if it's safer or not, so you might as well smoke anyway. Now, what your mate needs is a Cochrane review. All the facts have been checked at least twice. They find there's a lot that the experts agree on and might give you different advice.

Speaker 1

Hi, my name is Nicola and I'm a researcher based at the University of Oxford in the UK.

Speaker 2

And I'm Jamie and I'm a researcher based at the University of Massachusetts Amherst in the United States.

Speaker 1

We are both members of the Cochrane Tobacco Addiction Group. Welcome to this edition of Let's Talk E-Cigarettes. This podcast is a companion to a research project being carried out at the University of Oxford where every month we research the e-cigarette research literature to find new studies. We then use these studies to update our Cochrane systematic reviews of e-cigarettes for smoking cessation and interventions for quitting vaping. This type of review is called a living systematic review and in each episode we start by going through the studies we found that month and then go into more detail about a particular study or topic related to e-cigarettes.

Speaker JHB

So this month, we're covering searches from August and September because we took a podcast break in August. For interventions for quitting vaping review, we found eight new ongoing studies and four papers linked to studies we'd already identified in our review. For our e-cigarettes for smoking cessation review, we found three papers linked to studies we'd already identified in our review and two new completed studies. We'll tell you about those in a nutshell.

Speaker NL

The first included study is an abstract for a poster presentation led by employees of the Altria Group Inc and so funded by the tobacco industry. It included 153 participants who were randomly assigned to one of four e-cigarette groups or a group who

continued to smoke. Those in the e-cigarette groups were asked to switch from smoking to e-cigarettes for one week and various biomarkers were measured at day eight in all of the groups. Statistically significant reductions in 16 of the 18 biomarkers of exposure were observed for all four electronic vaping products compared to the combustible cigarettes group. The differences between the four e-cigarette groups is unclear from the limited information we have and findings are not broken down in detail across these groups.

Speaker JHB

So, our other new study has results posted on clinicaltrials.gov. This study was funded by Fountain Ventures PV, which is a wholly owned subsidiary of Imperial Brands PLC, which is a tobacco company. This study enrolled 240 adults who smoked, and it randomized them to either continued smoking or to switch to a range of different e-cigarette arms, which were either the MyBlu or Juul e-cigarettes with different nicotine and flavor profiles. It set out to look at changes in biomarkers of exposure at 8 weeks. As the data is posted on clinical trials but has not yet been published in an academic article, we can't see results from formal statistical analyses, but we can see that carboxyhemoglobin, NNAL, and 3-HPMA, as well as mercapturic acid, all of these are harmful byproducts of cigarette smoke, went down in the e-cigarette arms but remained relatively stable or went up in the continued smoking arms, basically suggesting that across these e-cigarette arms were seeing reduced exposure to these harmful ingredients from smoking. No serious adverse events appear to have occurred in any arms. So, this month, Ailsa and Nicola had the pleasure of attending the Society for Research on Nicotine and Tobacco's European Conference in Paris. For this month's deep dive, Ailsa interviewed Professor Suchitra Krishnan-Sarin from Yale University in the US about some of the research she presented at the conference.

Speaker 6

So Suchitra, thank you for being a guest on the podcast. So, could you start by introducing yourself and tell us what got you into studying e-cigarettes?

Speaker 7

Sure. Thank you, first of all, for having me on the podcast. My name is Suchitra Krishnan Sarin. I'm a professor in the psychiatry department at Yale School of Medicine. And I have been interested in understanding both addiction and developing interventions for tobacco products for almost 25, 30 years. My initial work has all focused on developing interventions, both pharmacological and behavioral, for smoked products, so combustible products like cigarettes, cigars. And then I developed an interest in understanding the use of these products in youth, which then led to intervention trials on how to develop interventions for youth. And as you know, with youth, it's a little difficult to use pharmacological agents because most of them are not approved for youth use. So we went the route of behavioral cessations and we have done a lot of work on using cognitive behavioral therapy and other behavioral platforms to help youth quit smoking. And when we saw the huge increase in use of e-cigarettes among youth,

and we realized that many of the youth who were using e-cigarettes were actually interested in quitting vaping these products, we decided to transfer some of our knowledge in developing cigarette smoking interventions to developing vaping interventions. So that's how I came full cycle to developing vaping cessation interventions.

Speaker 6

Thank you, that's absolutely fascinating. And so could you tell our listeners about your study assessing the behavioral intervention Kick-Nic, the smartphone app for vaping cessation, and this is among youth, and it also addresses the use of cannabis and other tobacco products.

Speaker 7

Yes, of course. So first of all, to start out, I have to say that for anybody developing any interventions with youth, it's very important to get youth-specific information. You know, we have a lot of interventions, even apps that already exist on Apple platform and so on and so forth, that say that they have been developed for vaping cessation but have neither youth-specific content nor have they been tested to see if they work in youth. So, our initial step when we started this work was really to try and understand from youth what they would want in a behavioral platform for vaping cessation. And interestingly, what we learned is that youth were very interested in learning skills on how to quit vaping. They were very concerned that they helped use nicotine products to deal with stress, deal with anxiety, to deal with the craving that they had, when they were not able to use vapes. And these were very similar to the things that we had seen with cigarettes. So, we got really deep into getting information from them using qualitative interviews about what they would like to see in a behavioral cessation intervention. And we then adapted that information into manuals, which is the way that most behavioral intervention trials are done. You have to develop a manual, you develop modules that address each one of the different components that youth are concerned about. And then we developed this manual and we tested it in a clinical trial. I did not present the results of that clinical trial here today, and it is actually out for publication and should be out published very soon. But with the CBT or the cognitive behavioral therapy platform that we developed or manualized, we actually found six-month cessation rates of 35 to 40% among youth who were nicotine vapers. And these were biochemically confirmed. So not just self-reports of quitting, but also biochemically confirmed. So, we were very excited about these results. But then we also wanted to stay with the idea of being able to make this behavioral intervention accessible to youth. So one of the things that we run into with many of our youth cessation trials when we are working with a therapist is that you don't have the time and they don't want to take even 15, 20 minutes in a day to talk to a therapist. So we said, wouldn't it be neat if we could transform this information into a platform that could be used easily by youth, which is what led to the development of this app. And the app is really designed to model CBT the way CBT would be provided by a therapist. So there is a check-in, it teaches the youth the skills, and then it actually role plays with them. There are various videos that they can watch about how to role play each skill. So they

are actually not just reading about the skill, but they are also learning how to use it in their daily lives. And then it also allows them to set up a plan for how they plan to use the skill. So to give you an example that I gave during the talk, let's take the skill of refusal. So if somebody offers a youth a vaping product, how exactly do you refuse? Most youth will refuse by either being very passive, by saying, not now, maybe later, which then leaves them open to the opportunity of being offered again. Or they will react with a great deal of anger, saying, how can you offer me this when you know I'm trying to quit smoking, which is also not the right attitude because then they could lose friends, their friends may push them more on using the product. So I think setting clear guidelines with your friends, letting people know you're trying to quit, getting the social support to quit among your friends who are vaping is very important. And what we find is youth who use the app say that even their friends who are vaping are willing to respect them and support them in their quit efforts. So we really take a very CBT-based approach in each of these modules to teach you how to quit vaping. And our initial efforts in testing this app have been pretty successful. It's been well-liked, and you have managed to quit. But we will see if it holds out because we are doing a large-scale trial right now.

Speaker 6

Thank you. That's a great, very full answer. So thank you very much. Did you come across any challenges?

Speaker 7

In developing the app? Well, first of all, it's expensive. So one of the things I tell everybody is that we would not have been able to do this work if we did not have a source of funds which allowed us some flexibility in terms of how the work proceeded. So it was very enjoyable. I thoroughly enjoyed doing this work. And I think the problems that someone might have in doing such work is having access to the youth population. It was not a big concern for us because we have been working with youth in Connecticut in the U.S. for a very long time. So we have an active presence in high schools where we go in and we educate kids on using substances, using tobacco products. So since we had a connection, we were actually able to get access to the youth pretty quickly. So I think that would be the biggest problem that someone could face.

Speaker 6

Thank you. And anything that surprised you?

Speaker 7

What surprised me was how concerned youth were about the use of these products. I never realized that it was impacting them in a way that we were really not picking up. For example, a lot of the youth that wanted to quit wanted to quit because they were telling us, I'm an athlete and my lungs feel like they are filled with water because of my use of these vape products. Or that I have asthma and I feel like my asthmatic episodes

have gotten worse. I don't think epidemiologically we are doing a very good job of picking up on this information. And I think we need to develop better methods of starting to survey you about these kinds of concerns, which may be more important to them. You know, youth are not concerned about, am I going to have a heart attack from using this product? Because they are years away from something like that. And I doubt we are even going to find a great connection almost immediately between things like cardiovascular problems and e-cigarettes. We may actually even find the beneficial effects of e-cigarette in people who are trying to quit smoking. You know, when they use e-cigarettes, you may find that there's a benefit to their cardiovascular outcomes. That's very possible. But you don't understand that. So we need to look at health outcomes which really matter to youth and things like cognitive functioning. Things like the cycle of addiction, things like lung functioning, these are things that are very important to youth. And I think we need to do a better job of assessing those.

Speaker 6

Yes, you're absolutely right. And it's good to be bringing this information together about tools to help young people to quit.

Speaker 7

Yes, one of the things we try to do is we actually look for information in the literature on what has been shown to youth and we turn those into educational programs to go back and present to youth. So we now feel we have sufficient information about the respiratory outcomes and how it impacts youth. So we do take a lot of the information and feed it back to the youth about what it does. So if anybody has any information on health outcomes that they think impact youth that would be useful to present to youth to make them understand the harm potential of these products, we would really appreciate that.

Speaker 6

Good. And you alluded to the quite high levels of quitting in your other study, which is actually going to be included in our review. Do you want to make any more comments about that study just briefly?

Speaker 7

So that study was very interesting. We actually started out with a model that we had used in the past which offered you rewards for quitting or rewards for just participating in the program. So there's a model called contingency management where you reward somebody for achieving a particular behavior, or it's called behavioral reinforcement. So we had in that study, everybody got the CBT that I mentioned to you, which is on this Kick-Nic app, but then we'd randomized people to either receive rewards for actually abstaining versus rewards for just participating in the program and not really abstaining. The reward levels for the two groups did not differ. In our earlier smoking cessation work, we had found that offering rewards for quitting smoking did make a difference. In

this trial, very strangely, we found no differences. So offering rewards did not make any difference to the youth in terms of quitting vaping. So we attribute whatever we see to the CBT, but kids love the cognitive behavioral therapy piece of it. I have never seen in this intervention that it was actually offered by therapists. And I have never seen as high attendance rates as I saw in that trial. These kids were desperate for help and they wanted to learn the skills. We had close to 85% of our sessions attended and we had close to 95% retention on the trial.

Speaker 6

That is very impressive.

Speaker 7

It was very impressive.

Speaker 6

And just one quick comment. It was a point that was raised in the talk that we were just at, that you mentioned that the level of nicotine is very high in the vapes that you're assessing.

Speaker 7

So this is not data that I have in youth because we are still collecting the youth data. We haven't analyzed all the youth data in our newest trial. I run a Tobacco Center of Regulatory Science, which is funded by the FDA at Yale. And in that center we are very interested in understanding aspects of the product that increases their appeal and addictive potential. What we are interested in is achieving a balance between how can we make the product appealing to a smoker who may want to use them to quit smoking, but yet keep it so they are not as appealing to you. And some of the things we are focusing on in that work are the use of flavors, the use of sweeteners, things like that in these products. So in those trials where we recruit a lot of adult vapers, we are actually finding that the levels of cotinine,

Obscure science definition

NL: Cotinine is chemical produced when the body breaks down nicotine

Speaker 7

.. urine cotinine, blood cotinine in their system are three to four times what we used to find with just cigarette smokers. And I think it's probably because of these newer products which contain very high levels of nicotine. And we always believed that smokers knew how to regulate their levels of nicotine, right? With cigarettes, we would always say, oh, smokers know how much they want to smoke, how much nicotine they want to get. I think it was really related to the combustion and the format of the cigarette, that they were able to use one and then put it away. With vapes, it seems like

they have no regulation. They don't have a signal. They don't know when to turn it off. And they are constantly using them. So we are finding, we are actually finding levels which are really high of cotinine levels in vapors. And as I was mentioning in my talk, we first thought it was an assessment or an assay error. So I made our laboratory people go back and run the standardization multiple times. I said, this is impossible. How can we have such high levels? And it turned out to be true. It is high.

Speaker 6

Thank you for discussing that a little bit. And one of the things we often ask people at the end of our podcast is, if money or resources was not an issue, what do you think are the important things to do in this research area going forward?

Speaker 7

Well, first of all, I think we need a lot of better education programs for youth. You know, we have had multiple programs in the US that some which have worked and some which haven't. And I'm sure that's the case everywhere. I do a lot of work with the WHO, and I have been amazed at how much less resources so many other countries have. I think in places like the U.S., Canada, UK, we have a lot of resources that we can use, and even that's not sufficient, so I can't even imagine how the other countries are dealing with it. I hear from my colleagues in South Africa and Asia saying all the products that you guys managed to get out of your countries are now appearing in our countries, and our youth are using them. So I think the more we can make this a global issue, raise awareness about youth use, and able to educate youth about not using these products, the better off we'll be.

Speaker 6

Okay, well thank you very much. And finally, is there anything we haven't covered that you'd like to add or anything you'd like to leave our listeners with?

Speaker 7

I would just like to leave you with this, which is that just because I'm interested in reducing youth use does not mean that I do not believe in the harm reduction potential of e-cigarettes for smoking cigarettes. If we are able to make the product accessible to smokers and it helps them quit smoking, I am all for it. But I also believe we very strongly need to have programs that prevent youth from initiating and help them quit because most youth are not starting with combustible products today but with e-cigarettes.

Speaker 6

That's a very important point. So yes, and as you said, e-cigarettes can be a very useful harm reduction tool and we don't want to lose sight of that. But equally, we need to address the different population needs. So thank you very much and I look forward to chatting with you again soon.

Speaker 7

Thank you for having me.

Speaker NL

I think that was a great interview Jamie and I really thought good points were made about thinking about what the concerns are about tobacco and nicotine products to different groups and that was actually a theme that felt like it went throughout the conference in various talks and discussions that we have. It's really important to acknowledge that the perceptions of harms and also the actual relative harms of nicotine vaping will be different for people who are currently smoking or have previously smoked versus those who haven't. And so obviously it's not as simple as just saying that it's a case of vapes are good for everybody and unfortunately not as simple as everyone should or shouldn't quit. And as Suchitra says, the considerations we need to make are also going to differ across different countries as well.

Speaker JHB

Absolutely, I really appreciated those points and that nuance that she put across. There were like at least three things she said that really surprised me a little bit and I would have loved to hear more about and hope we do hear more about in the future. One was just noting that they biochemically validated their vaping cessation rates in the long term and still had really high quit rates, or at least compared to what we see with smoking. So they were reporting biochemically validated rates ranging from 35 to 40%, which is really quite impressive. So far in our vaping cessation reviews, we've often seen these higher quit rates, but a lot of them are self-reported, so we're not totally sure if they reflect what's actually happening. But with these biochemically validated ones, that's really encouraging. Those are really great numbers. I also thought it was interesting, you know, we know from the smoking cessation literature that contingency management and other ways giving people financial incentives to help them quit, is one of the most effective ways to help people quit smoking. And I thought it was interesting that they didn't see that in their particular study on vaping. And the final thing that I thought was really noteworthy and I hope we see more studies of in the future was around those really high nicotine levels. I thought it was interesting that she thought at first the lab had made a mistake and that made them rerun it. And you know, we take this self-titration of nicotine to be an evident truth from the smoking literature, but it does suggest we need to look into this more and see if that is the same when it comes to vaping or maybe there's something different going on there.

Speaker NL

Yeah, absolutely. Yeah, it's really interesting work that's being done.

Speaker JHB

Yeah. All right, well thank you all so much for listening. We will check in again next month.

Thank you so much for listening and please check in next month for another episode of Let's Talk E-Cigarettes. Please subscribe on iTunes or Spotify and stay tuned for our next episode. Thank you to Jonathan Livingstone Banks for running searches, to Ailsa Butler for producing this podcast, and of course to all of you for tuning in. The music is written by Jonny Berliner and I and performed by Jonny. Our living systematic reviews are supported by funding from Cancer Research UK. The views expressed in this podcast are those of Nicola and I and do not represent those of the funders.

Musical outro

Even though we know vaping is safer than smoking, we may still find cause for concern. If you're thinking of switching to vaping, do it! That's what the experts agree. Smoking's so bad for you, they all concur that vaping's burning. There's much to learn of a bad long term yet to be seen.