How nutrition can help fight against cancer

Eoin Gubbins speaks to UCC lecturer Dr Aoife Ryan about cancer and nutrition

IN A Career that has taken her from Midleton to Cork to New York and back to Cork, Dr Aoife Ryan has largely researched nutritional factors that reduce or increase the risk of cancer.

Now a lecturer in Nutritional Sciences in UCC, Dr Ryan, from Midleton, became interested in that area under the guidance of Prof. John Reynolds while working as a Clinical Dietitian at St James’ Hospital, Dublin.

She graduated first in her class from Dietetics in a joint degree awarded by DIT and Trinity, in 1999, and won £7,000 in research funding from Flora to be used in three years.

Nonetheless, it was an unusual turn for someone whose early experiences with research had not gone well.

“I had hated my undergrad thesis, by a complete irony it was a nightmare! I remember my parents said to me, ‘You’re never to do research again! You had such a bad experience as an undergrad!’ But as a postgrad it was the opposite.”

She discussed some ideas with Prof. Reynolds, and came away with something concrete.

Earlier in his career, while conducting surgery on patients with cancer of the oesophagus (the pipe through which food passes on its way to the stomach), Prof. Reynolds’ patients had been thin, and the surgery had been relatively straightforward.

By the early 2000s, Prof. Reynolds noticed patients were heavier, and the surgery was becoming more difficult.

“The rates of this cancer were going up. He wondered if obesity was related to this cancer, and I thought this was fascinating,” says Dr Ryan.

With her Flora funding, and more from Prof. Reynolds, she began the time-consuming process of examining records for patients with oesophageal cancer from a period of ten years. They ultimately found that obese patients were eleven times more at risk for cancer of the lower oesophagus, which Dr Ryan says is the cancer with the fastest-growing incidence in the Western world.

They realised that her days as a Clinical Dietitian were over. “I was really bitten by the research bug then. We presented it at Irish and international conferences, and I was about a year into that when he said I should think about doing a PhD.”

In late 2007, immediately after completing her PhD, which allowed her to continue her research into nutritional factors leading to cancer, she headed to New York with her husband. He was training to become an oncologist, and had secured a fellowship in Manhattan.

“It was a really stressful time, but an exciting time,” she says. Though she initially went back to clinical work, she missed research too much. She applied for and won a post as an Assistant Professor at New York University.

Although she was on track to receive a permanent position, after two years the pull of home was too much for the couple. Her husband got a job in Cork, and she left New York without knowing where she could be about to take her. However, her experience abroad quickly won her the position she now occupies as a Lecturer in Nutritional Sciences.

“I think going to the States was the making of my career,” she says. “They told me that because I had international teaching experience, that was what got me into the job in Cork. It all worked out so well.”

Now that she’s home, Dr Ryan is focused fully on teaching UCC undergraduates, and continuing to research how nutrition and cancer interact. She is still interested in the role of obesity, and rattles off some alarming figures.

“Only 20% of people have a normal weight for height, and the overwhelming majority of people in Ireland who are over sixty are overweight or obese, between 70% and 80%.”

“We have a huge problem on our
hands, and it’s fuelling everything from diabetes, heart disease, and many other cancers.”

Further research has shown that obesity is also linked to breast and colorectal cancer.

“IT’s just unbelievably convincing, the relationship between obesity and cancer all over the body, and it’s something I think the public don’t know anything about. I think they’re getting better, but they know very little about this.

They always say fat will give you high cholesterol and might give you a heart attack, but cancer isn’t something that automatically springs to mind for a layperson when they think about what happens when you’re overweight.”

The key to dealing with this issue, she believes, is education.

“It’s all down to education, and educating people on the risks of being overweight and obese in terms of every disease, including cancer.”

As well as obesity, she says another key factor driving oesophageal cancer is chronic acid reflux, wherein pressure put on the lower oesophageal sphincter can cause stomach acid to leak back into the oesophagus. That pressure is often caused by high-fat meals, caffeine, smoking, certain foods, and alcohol.

Although much of her focus has been on being overweight as a risk factor in cancer, Dr Ryan emphasises that once patients begin treatment for cancer, it’s vital that they not lose weight.

She and her colleagues looked at the benefits of high doses of Omega-3 fatty acids, typically found in oily fish, which she says, “could downregulate all the inflammation that happens after surgery, and that it might slow the weight loss... We basically showed in that first study that it preserved nutritional status so people didn’t lose any muscle, and they lost much less weight.”

Their next step is to extend this study with a longer period dosed with Omega-3, and further investigation of whether maintaining weight matters to quality of life and physical activity.

“We knew that, patients having oesophagectomies, they’re coming in overweight, but once they get cancer they lose an awful lot of weight and muscle very quickly, and we know that’s linked with how long they’ll live,” she explains.

Data gathering has almost been completed for this experiment, and they hope the analysis will bring more insights on how diet can help patients to deal with cancer.