Australia-ASEAN Academics Forum:

Online Education during COVID-19 and Beyond

AAF Prof James Vicker's talk 16th 16/06/2021

Monica

I was just I was just about to remind you we were going to record so please remember that and if you could all keep your microphones and your cameras turned off unless you're speaking, just to help with everybody's broadband that's very helpful thank you.

So we'll begin as always with an acknowledgement to country and then I shall introduce our speaker for today so the Australian ASEAN academics for online education during COVID-19 and beyond acknowledges the traditional owners of the land where this program was developed the palawa people of the lutruwita nations we pay respect to the traditional owners and elders past present and emerging of the land on which all of the University of Tasmania campuses stand. On behalf of the University of Tasmania we acknowledge all countries participating in this for and also acknowledge their elders and ancestors and their legacy to us. We acknowledge the traditional owners of the lands where our partners and participants live and work across Australia and Southeast Asia.

So let me now introduce our speaker for today our speaker is Professor James Vickers who's a UTAS's distinguished Professor he's the director of the Wicking Dementia Research and Education centre and Dean of the Tasmanian school of Medicine. Professor Vickers is a past president of the Australian neuroscience society a member of the NHMRC principal health translation advisory committee and university's Australian health professions education standing group. He is also a board member of the dementia Australia research foundation and Glenview community services.

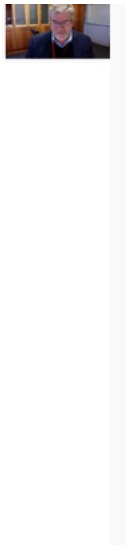
He has a research track record in the neurosciences including acquired neuronal image injury, neurogenic neurodegenerative disease and plasticity, as well as health services research and co-force cohort-based interventions. A lot of hard words there today. Professor Vickers has said that he would like to have questions uh at the end of his presentation so I'll ask you to keep them to those over to you Professor Vickers.

Prof Vickers

Thank you Monica thank you very much for that introduction. So now I'm going to attempt to share my screen successfully and then you regret having too many screens opening on your computer but hopefully this will work. And then I believe I can also get a laser pointer there. So again thank you very much Monica for the introductions I'm absolutely delighted to be part of the Australian ASEAN academics for. It's and it's wonderful to see so many people coming along today so thank you for coming along today.

I guess my presentation will be a little uh unusual in the context of this for because it is really mainly about how we develop this online learning strategy to try and reach as many people as possible with respect to dementia education.

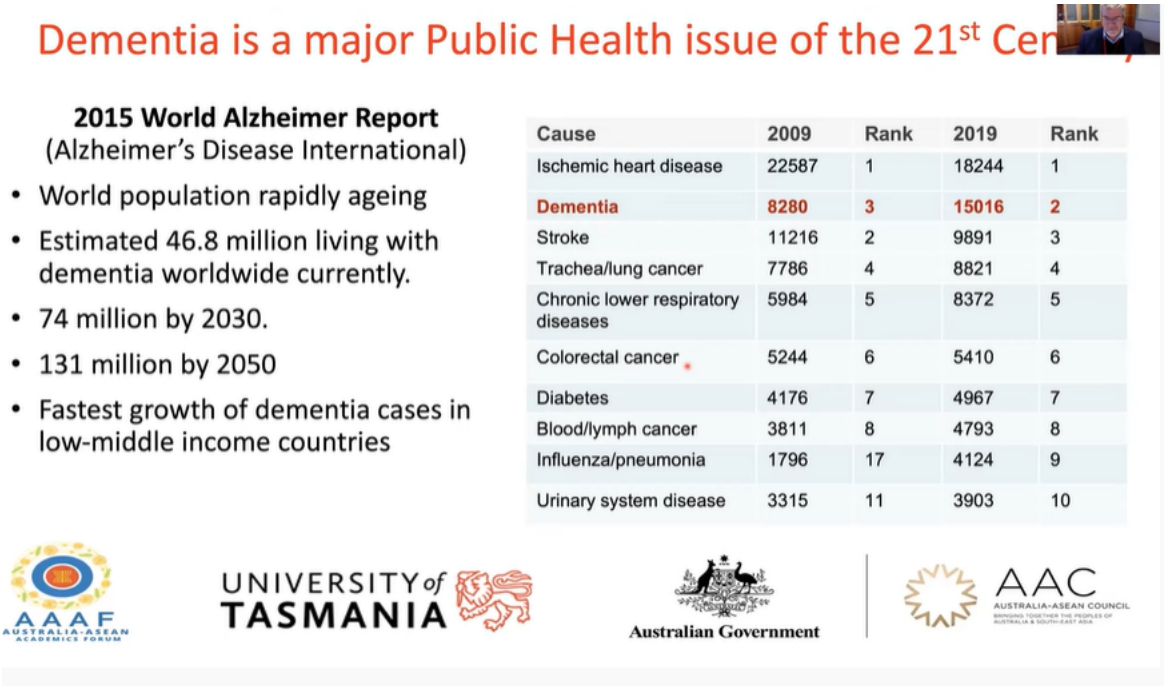
But I feel also need to tell you a little bit more about some of the issues that are associated with dementia so please bear with me and I'll have a first few slides really just I guess outlining how dementia has become such an enormous health social and economic set of issues really across the world.



Oh here we go so first thing people might be variably familiar with dementia really is just a term that you use it's not actually a disease in of itself it's really an umbrella terminal syndrome to describe a suite of conditions and diseases that lead to changes in brain function. So one of the misconceptions that is commonly out there is dementia is a product of aging. It's not in any way part of what we might refer to as normal aging. It does involve this change in brain function. Typically people think about this in terms of memory but it can be all sorts of other higher cognitive functions as well; thinking planning organizing language and speech. And it can also affect your behaviour and cause alterations in your personality. In the very later stages of dementia it can also have what we refer to as motor effects so it can really affect the body physically.

What dementia is though is it represents a number of different diseases these diseases involve pathological changes inside the brain so they're like diseases that would affect any other organ of your body, and I often say this is actually the good news about dementia because if they're caused by a number of diseases, if we understood those diseases really well we might be able to come up with a way of intervening to either stop the disease from happening or at least to try and slow it down a bit. I'm having a bit of a problem advancing my slides there we go.

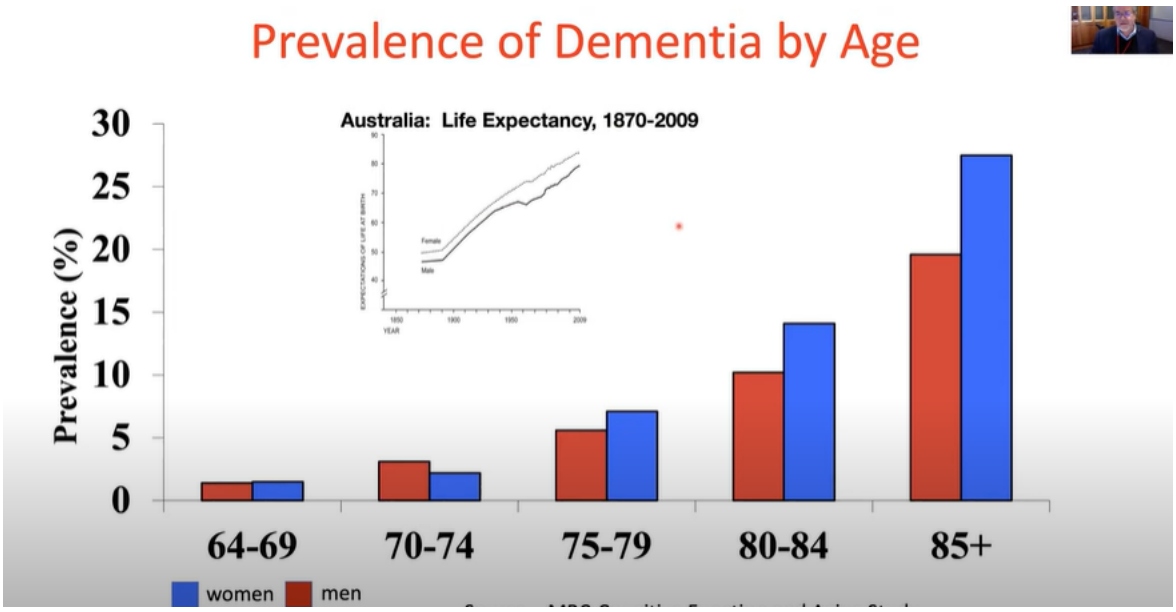
And there are four major diseases that cause dementia but literally there are dozens of diseases and conditions that will lead to dementia. One many people might have heard about is Alzheimer's disease that's probably the single largest cause of dementia probably somewhat around about 60 of cases but here are the other three major ones: frontier temporal dementia, lewy body dementia and vascular dementia. Now pretty much all of these are diseases that are associated with aging so it's not actually uncommon for people who develop dementia to have more than one of these diseases. For example Alzheimer's disease and also vascular dementia.



If we look at dementia more broadly we think that there's around about 47 million people across the world who currently have dementia so that's quite a lot of people but with the aging of populations again across the world we're expecting this to increase quite markedly, so up to around about 74

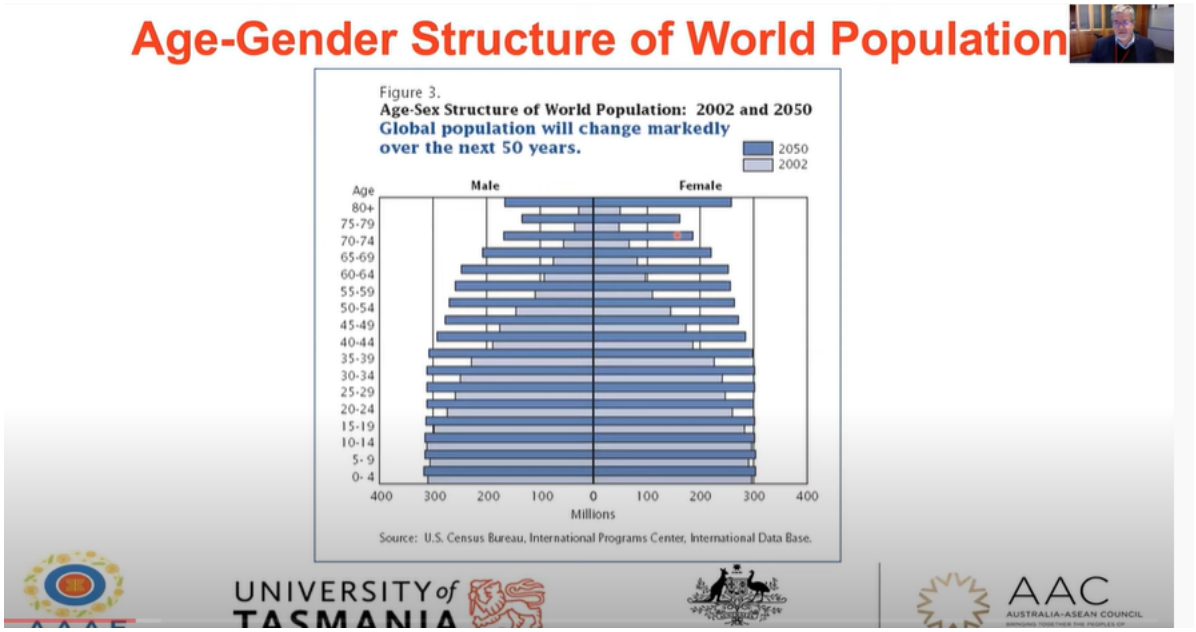
million by 2030 and 131 million or so by the middle of the century. Now this is uh again an issue across the world but where it's really turning out to be a very pointed issue is in low to middle income countries because they're also seeing the ones they're the countries with the most rapidly aging populations and so they will see a rapid rise in dementia cases over the next few decades. They also tend to be countries too that don't have much in the way of formal aged care or dementia care as well too so you can see how this ends up being quite an important health and social issue.

In Australia on the on the right hand side here is a table that shows the ten major causes of death in Australia over a decade from 2009 to 2019 and we can see at the top of that list is ischemic heart disease but even over those 10 years the absolute numbers of people dying from ischemic heart disease has gone down and that's a good news story that's one of the reasons why the population is getting broadly older over time. We have well identified ways of preventing or at least managing heart disease so that less people at the end of the day are actually dying of it. Where we're seeing a big increase in the number of deaths if you like over that decade is in dementia. So currently it's ranked as the second leading cause of death in Australia. If you actually took women separately it's actually the major cause of death of women in Australia and very soon in the next few years we'll see that the number of people dying from dementia will actually exceed those who are dying from ischemic heart disease. So again another measure of the impact of dementia. So that's why we think really it should be considered as a as a major public health issue of our century.

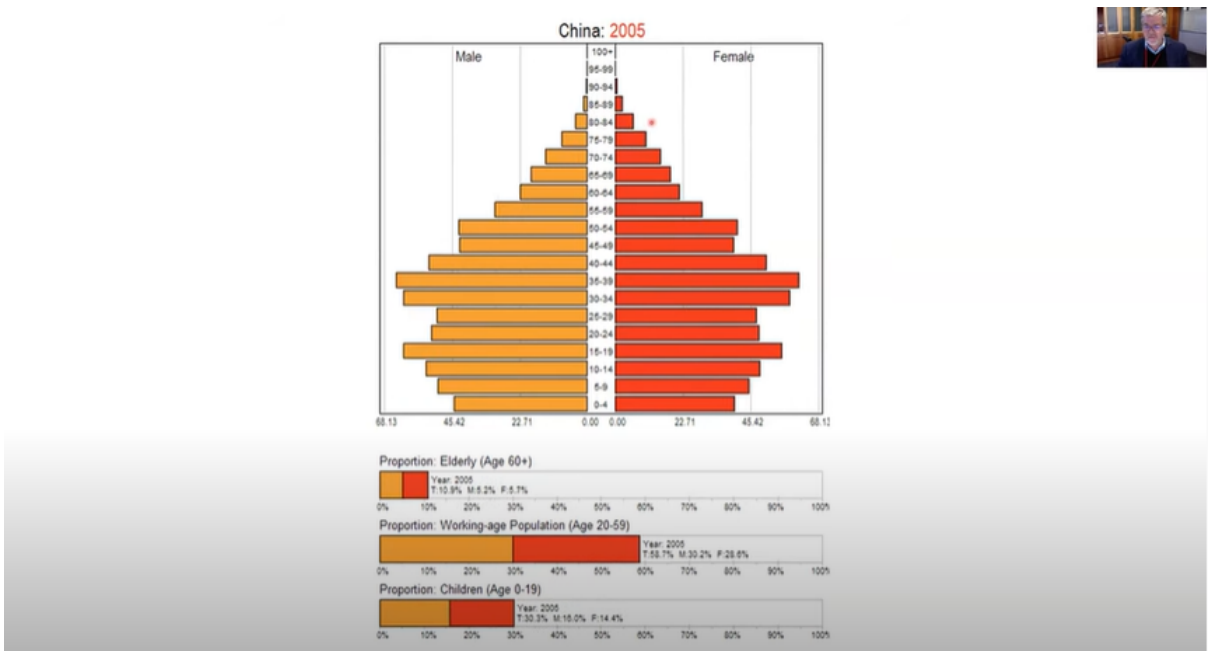


So dementia is a condition that is linked with aging the older you get the higher risk you have of developing dementia. So this just shows and this is a study was conducted in in the United Kingdom again as people uh get into these older age brackets the prevalence of dementia goes up quite steeply. Now overall in many countries there are more women than men that will develop dementia and this is partly attributed to the fact that women by and large not uniformly but by and large have a greater life expectancy than males. But even if you were to account for that at, the same age women still seem to be at a higher risk of dementia we don't really understand the reasons why. But it is an aging related condition when you get into your late 70s and into your 80s then your chances of developing dementia go up go up quite steeply. And in Australia again uh life expectancy continues to rise with a few hiccups here and there but for females and males, it has risen over the last century or so it's not really so much sign of plateauing off. But you'll see also again that females

tend to live longer than males. So increased longevity or life expectancy plus this being an aging related condition will equal many more tens of millions of more people developing dementia over the next years and decades.



So how does this pan out globally well if we look at the world population? It's just a comparison of the distribution of people males and females at different ages from 2002 shown in sort of the light blue through to 2000 estimated at 2050 in the darker blue, and you'll see in 2002 that age distribution looks a little bit like a pyramid many more are younger people proportionately than older people as we move through the next few decades we're going to see proportionately much greater numbers of older people and the big growth group will be in people living over the age of 80. So again this feeds into dementia increasing in numbers quite substantially.



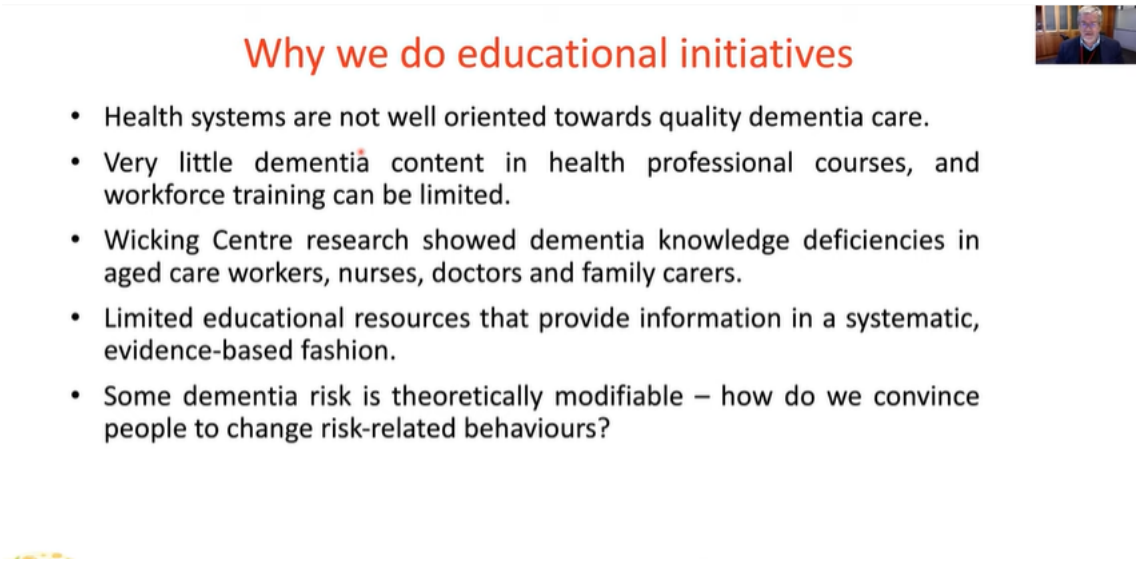
Hopefully this will work a little animation for China just showing China and again the distribution of people at different ages males and females from 1950 and then now projected into the future so you'll see in China uh in particular too there's this big growth of the numbers of people of in China who will be living into advanced age. So China already as a country already has the most people who develop dementia currently, around about 10 million or so by estimates, and they've got a particular problem now, especially on the back of the one child policy because they'll be you know one middle-aged person looking after aging parents and aging grandparents. So it poses not just a big health and social issue but also potentially an economic issue.

So a little bit about the Wicking Dementia Centre we're based again in the college of health and medicine in the University of Tasmania we were established in 2008 mainly by way of a collaboration between myself there in the front who's my background has mainly been in neurosciences and a little bit of psychology. And then my colleague Professor Andrew Robinson who was more of a sociologist and was our Professor of aged care nursing. We're both concerned about dementia so we thought it might be interesting if indeed we would come together and collaborate around the areas of research and education. Now Andrew's sphere of interest and my sphere of interest don't tend to overlap very much, don't tend to see people like us working together very closely really across the world. So we became committed to this idea of we may be able to do new and interesting things if we are multidisciplinary.

So within the centre we have a whole variety of different people with different backgrounds different health professional backgrounds different sort of I guess research disciplines and what we ask of people who come to work in the Wicking centre is that is that you come with a view to be committed to working together in a multidisciplinary way.

That's really where a lot of our educational programs have arisen and also has also played out in terms of our research themes around the care cause and prevention of dementia. So we've been around for a bit more than a decade. We started fairly slowly off in in the areas of education that has grown over time so that now we offer a variety of different courses or educational opportunities that vary from massive open online courses through to undergraduate and now also postgraduate

degrees. We get our name because we receive core funding from this John and Janet Wicking Trust which is a trust based in the equity trustees which resides in Melbourne.



So why do we do educational initiatives why do we think it was really important this was part of the DNA or fabric of our centre? Is that we did already know that health systems in Australia in particular were not very well oriented towards quality dementia care there's been lots of inquiries into this in Australia probably more recently in Australia also too we had a Royal Commission into aged care quality and safety. And this really showed that that by and large the provision of dementia care wasn't at the appropriate level of quality now. Part of this can be tracked back to people's educational deficits or poor understanding of dementia so the context here is very little dementia content in most health professional courses across Australia and across the world really and if you were to for example be involved in vocational workforce training again your exposure to the dementia education training could be quite limited and quite patchy.

Andrew Robinson's research in particular also showed that that there were these dimension knowledge deficiencies across the variety of different people who were affected by dementia. So this include aged care workers in the residential sector, nursing homes, nurses, doctors and as well as the close family carers of people with dementia and that this was really disabling. So that the lack of knowledge or four-dimensional knowledge really was closely linked to poor dementia care.

And at the time when we got together there was very limited educational resources around dementia there's a lot more now by a variety of different providers. At that time there wasn't much that provided information and systematic and evidence-based fashion there in fact a lot of very strange ideas and thoughts and attitudes and opinions about dementia that that weren't evidence-based and were having a disabling effect on care.

Also, too we while we don't have any drugs for treating dementia that are really very effective we come to know that some of your risk of dementia is theoretically modifiable. So there are things that you could do uh in your own sort of behaviour and health that might in fact reduce your risk of dementia but really nobody knows anything about this so how can we provide the knowledge and convince people to change some of these related behaviours was another area that we were interested in.

Building Dementia Literacy

How can we reach people with dementia, family carers and health professionals, and the wider public, to provide them with education they can usefully apply?

Can an educational initiative decrease stigma of the condition, augment awareness in the community, and build dementia literacy and self-efficacy?

So we came really interested in this question of how can we reach people with dementia we might be interested to know more about the disease family carers health professionals and just broadly the wider public to provide them with the education then they could then usefully apply in their own context.

Again there's a lot of misinformation about dementia out there, there's also a lot of fear about dementia, and stigma related to the condition as well too. So what can we do by way of these educational initiatives to decrease stigma increase the awareness in the community and then build dementia literacy and self-efficacy?

Addressing the knowledge gap at a 'mass' level

Developed the world's first MOOC on Dementia ('Understanding Dementia') in 2013

edX

coursera

OPEN EDUCATION

free education for all

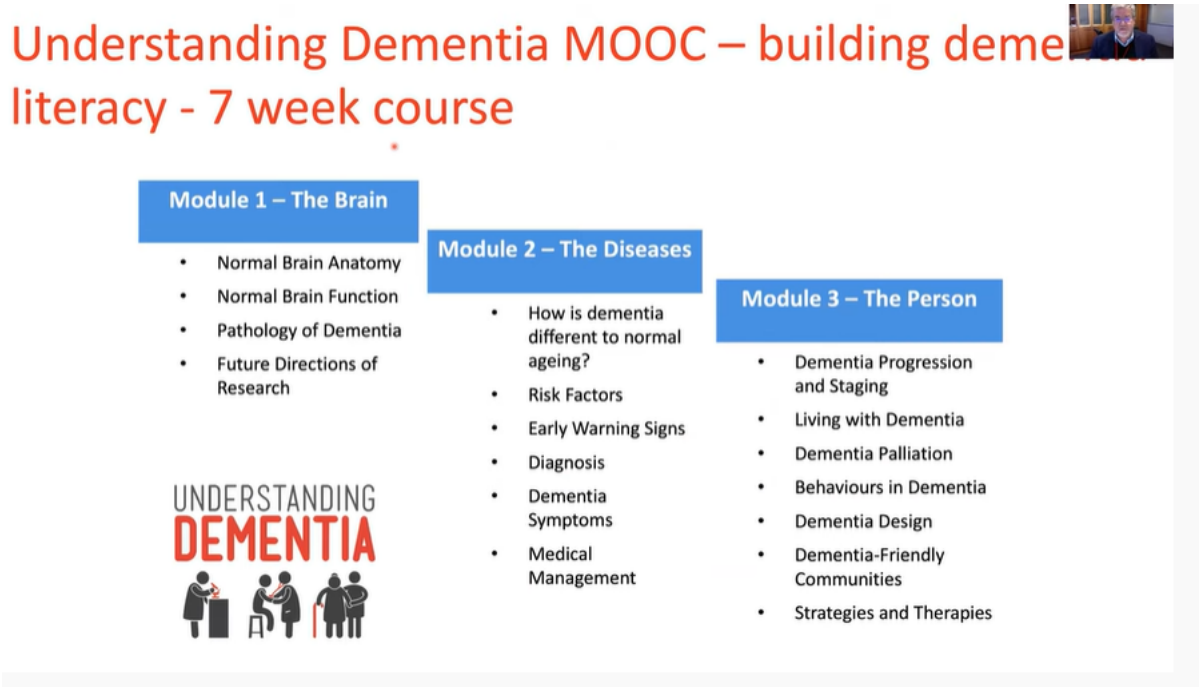
U

UDACITY

Massive Open Online Course

The other thing though you had to do though was no good really I guess planning on running local workshops with small numbers of people we had to come up with an approach that would reach all

of those different groups at the scale required to really have an impact. And so again not that many years ago, I guess you know eight or so years ago, there was a new trend in in higher education and these were called massive open online courses (MOOCs) so we thought about developing a massive open online course around dementia. Why this attracted us? Is well massive the idea of getting to a large group of people with the courses, open online so uh free courses that were available online so that you could access them through a variety of different devices.



So we collectively came up with this new MOOC first smoke around dementia and really one of the first MOOCs that had a particular focus on health conditions for understanding a health condition. And this is essentially a seven-week course uh that involves three modules and it's very important if you're going to develop a MOOC is to be able to tell in a sense a good story that underlies the principles that you want to relate through education. So we did this through the organization of these three modules. So we thought it was very important that people at least had a basic understanding of the brain because, if you had you know again some degree of understanding how the brain was linked to various functions, then when we tell you about the pathology of dementia you'll understand that there are diseases that are now linked to those symptoms and cognitive and behavioural features of dementia.

So again, this was really part of our story which was to say that to understand the person with dementia you really need to understand how their brain is affected by this condition and how it's affected in different ways as they as that condition progresses. So that was the initial module and we were a bit nervous about this because we thought potentially starting off with sections on normal brain anatomy and function that may well scare off a lot of learners but people report this is in fact something that they've enjoyed learning about and we don't tend to lose people so much uh once they've completed that module.

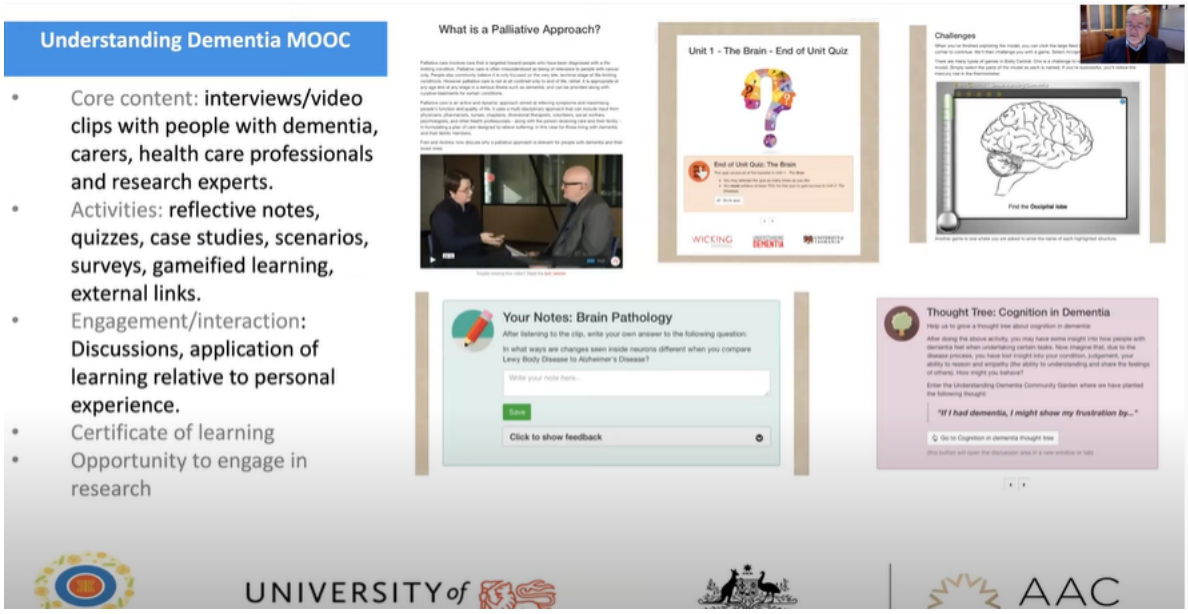
The second module is a little bit more standard information if you like. So this is really about telling you more about the how the diseases, diagnosis, the early signs, what are the symptoms that you might see at different stages of the condition, how do we diagnose it and what was available then in terms of medical management.

The third mod module which had actually a particular focus around the person who had developed dementia so again this is the idea of trying to link what we understand about the brain and the diseases with how they have an impact on that individual. So this talked about how dementia progresses over time, to go through various stages it's about the experience of people who are living with dementia, apologies if you've got a background noise there's just a helicopter landing on the on the hospital next door to me outside the window I can't do too much about that it'll stop in a minute.

Then to focus on this area we call dementia palliation, and this is really about living with dementia. At the end of the day is a life limiting condition but and obviously that's not good news but then if you could think about configuring care appropriately then that might make that that person's progression through the disease a little less awful than it can than if they were surrounded by people who didn't really understand the disease that well.

Also uh looking at behaviours that might be associated with dementia and how some of these might be generated by the disease but sometimes in response of those people to the environment that they find themselves in and how people interact with them. We talk a little bit about design so this is how we can design uh buildings and facilities and environments so that they're much easily much more easily navigated and utilized by people with dementia. We talk about trying to build uh dementia inclusiveness into our communities. This is often referred to as dementia friendly communities and then we go through the latest evidence about basically non-pharmacological strategies and therapies again to assist that person with dementia.

So in the sense we get back to the story of the, story the MOOC is it affects the brain in a particular way. You'll see the manifestation of that in certain symptoms and there's a story around the medical management. But in understanding that person as they're going through these changes uh that's when we'll be able to respond by configuring care to the best quality. That's sort of the philosophy or theory of the MOOC.



To do this, at the end of the day we actually had to develop our own learning management system. We employed coders and IT people to put this together because we found we did have a learning management system of our university but it really wasn't well configured to run a MOOC. Some of

this is by way of the things that we wanted to portray I guess through that learning management system but also because we wanted to build in a lot of research so the ability for people to be involved in research particularly through surveys and so forth. So it was a learning management system that enabled I think easy learning by the participants but also one whereby they get involved in research.

A lot of the content is video based and again through research we found that the people undertaking the MOOC this this particular MOOC would like less just a talking head to uh speaking directly into camera what they found was quite valuable was the fact people in dialogue often a person asking the questions and then an expert in their area or could even be a carer or person with dementia responding. So people found that sort of dialogue approach uh quite useful.

There are there are also a number of activities some game of gamified learning so you learned a bit about the brain and then you could do a little game to test your knowledge of the brain and how it works. You have a capacity to record your own notes into that system and they would be saved and you could download them at the end. At the end of each uh module we would also have a quiz people could repeat this quiz as often as they as they chose, but you had to get at least 70% on that quiz to then move to the next module.

The other thing that too that turned out to be really useful not necessarily through our planning but just through the experience of the MOOC was the capacity for people to be involved in discussion forums so we refer to these as thought trees so this is where we would sort of I guess prime the participants with a particular question and ask them then to answer. And this was turned out to be I think quite a valuable component of these MOOCs because this really represents social engagement and social learning by the participants, so I think this added a lot of value and people shared really quite interesting often intimate details of their own experience of dementia. Again including people who might be in the early stages of dementia family carers uh as well as some health professionals. So this engagement component I think is really important to think about when you're doing online learning.

At the end of the course, as you get to the end there's a completion module where you can download a certificate of learning which health professionals were particularly interested in so they could use it through their uh registration where health professionals in Australia are required to accumulate so many hours of continuing professional development. And again too what many participants like to be involved with was this opportunity to engage in research.

Offering	Enrollees	Completion	Int'l
July 2013	9,486	3,612 (38%)	25%
March 2014	15,138	5,520 (32%)	32%
October 2014	23,615	7,875 (33%)	49%
August 2015	23,624	10,370 (44%)	37%
August 2016	20,321	8,552 (42%)	32%
July 2017	29,471	12,110 (41%)	34%
February 2018	22,529	8,731 (39%)	40%
July 2018	22,169	8,177 (37%)	33%
February 2019	25,403	9,738 (38%)	35%
July 2019	20,731	8,279 (40%)	32%
February 2020	27,639	12,227 (44%)	34%
July 2020	26,302	10,747 (40%)	36%
February 2021	27,981	ND	38%

293,303 enrollees **(average ~ 39% completion)**

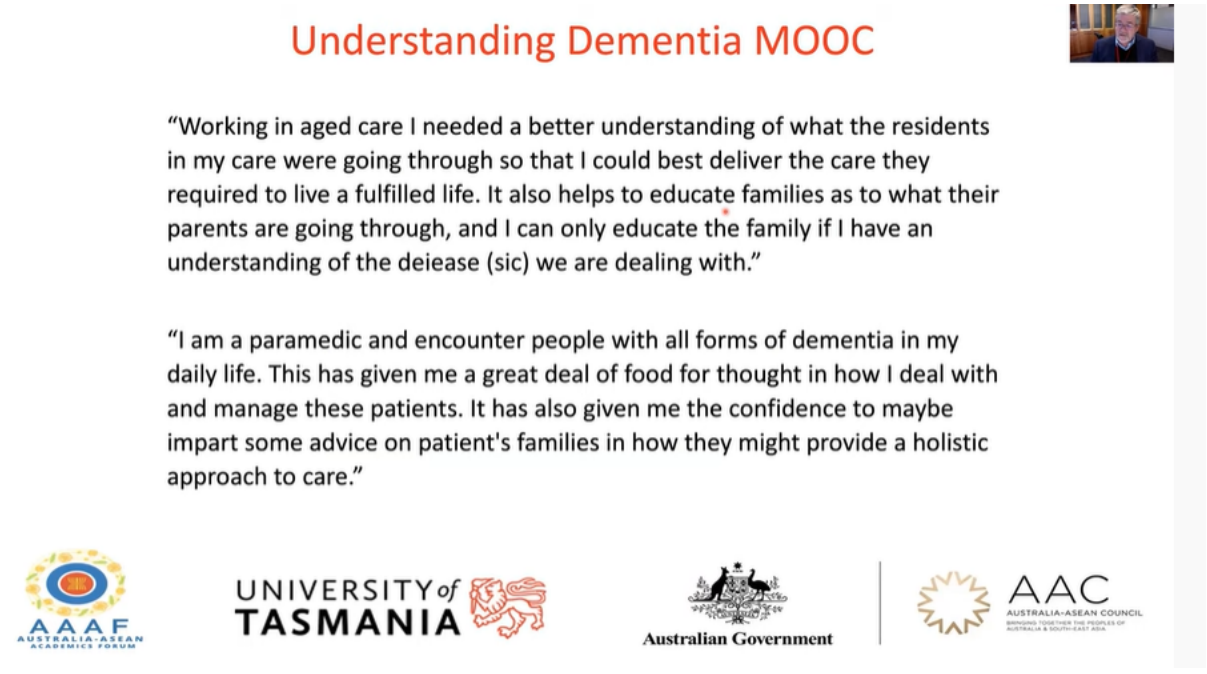
Top international countrie
United Kingdom
New Zealand
Canada
Unites States
Philippines
Singapore

It was quite a popular MOOC. Broadly we used to run it about once a year for the first few years because we didn't really have much in the way of direct funding to support the MOOC so we were sort of doing it off the side of our desks. But you can see the actual numbers of people doing it were fairly high with the funding from the Wicking trust we were then able to offer this MOOC twice a year. And we have another MOOC on preventing dementia which we also offer twice a year. And you can see the numbers have usually over 20 000 people or so do those individual MOOCs. About two-thirds of people who do the MOOC are in Australia and one-third are from other countries. We've pretty much got to every country in in the world but there are some countries where we do get you know quite a few people engaged. These tend to be unsurprisingly the largely the English-speaking countries the United Kingdom New Zealand Canada United States. But we're also getting a growing presence in in in Asia particularly the Philippines Singapore now also Malaysia and Vietnam too which is really quite interesting.

The other interesting thing too that since the pandemic came along too we did see it was sort of a bit of a jump in the numbers, so the last few times I've run it it's about 26 to 27 000 or so people and may well be because people have got more time available to be involved in in these courses. Over here we have the completion rate so the completion rates hovers around about 39 percent so these are that's the number of proportion of people who actually finish the course completely now that may not sound very good and certainly you wouldn't be very happy with that in a formal course, but in the area of MOOCs the standard completion rates are around about five to seven percent.

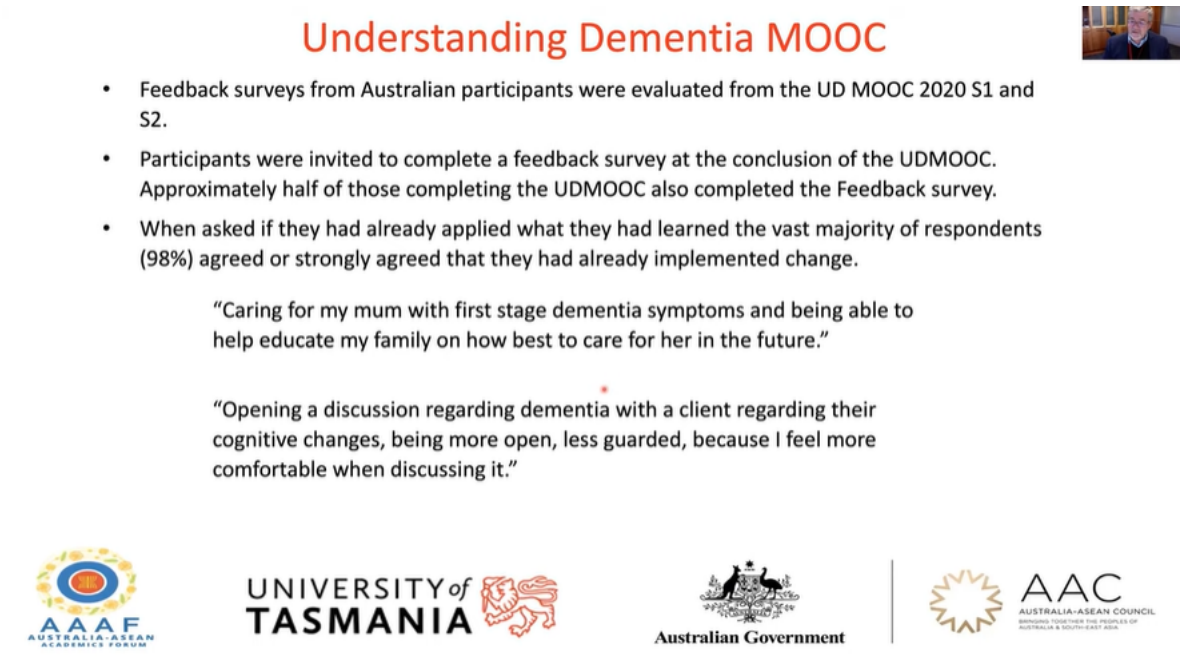
There are over fifteen thousand MOOCs now available across the world in a variety of platforms and by and large they really have very bad completion rates partly because they're free. So these are in fact as far as we understand it this is the highest sustained completion rate of uh of all the MOOCs that are available across the world.

There's just a little map again from our region showing people across 2020 and 2021 who under had undertaken the move and this is really how I see people extrapolating people's locations based on their internet provider. So you'll see again very popular in Australia particularly in the metropolitan centres but also out to some of those rural centres. Popular in New Zealand there's a big cluster here in Singapore but again more people throughout Asia India China Japan and a variety of small islands out there in the pacific who have been involved in undertaking the MOOC.



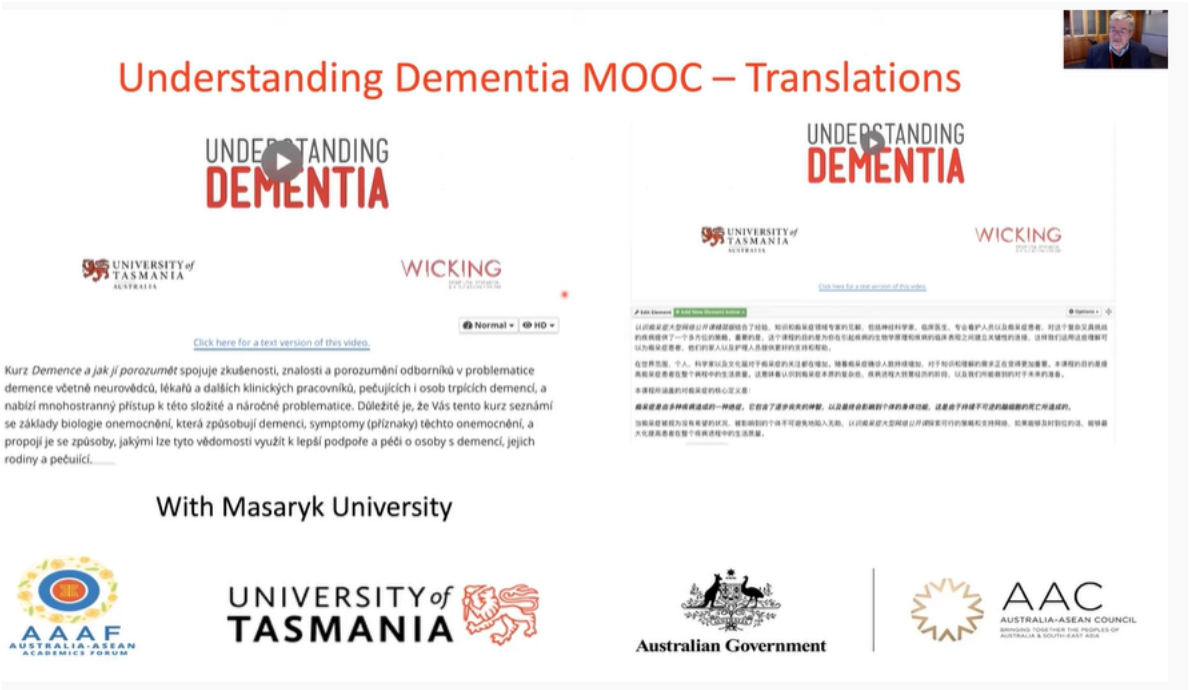
Just an example of some of the feedback that we get we we're very fortunate it's a very interactive exercise running MOOCs and you do get a lot of feedback from the people who do it but here's an example where somebody found that undertaking the move actually improved the quality of care that they were providing to residents. And obviously in some sort of aged care home. And they were able to pass on some of that knowledge they'd gain to educate the families as to what their parents

were going through. The example again of what we find is a lot of health professionals undertake this course again it's probably then remedial in nature because health professionals are more and more seeing older people and older people with dementia so again just an example of a paramedic who you know the MOOC gave them extra information and food for thought on how they deal with people with dementia.

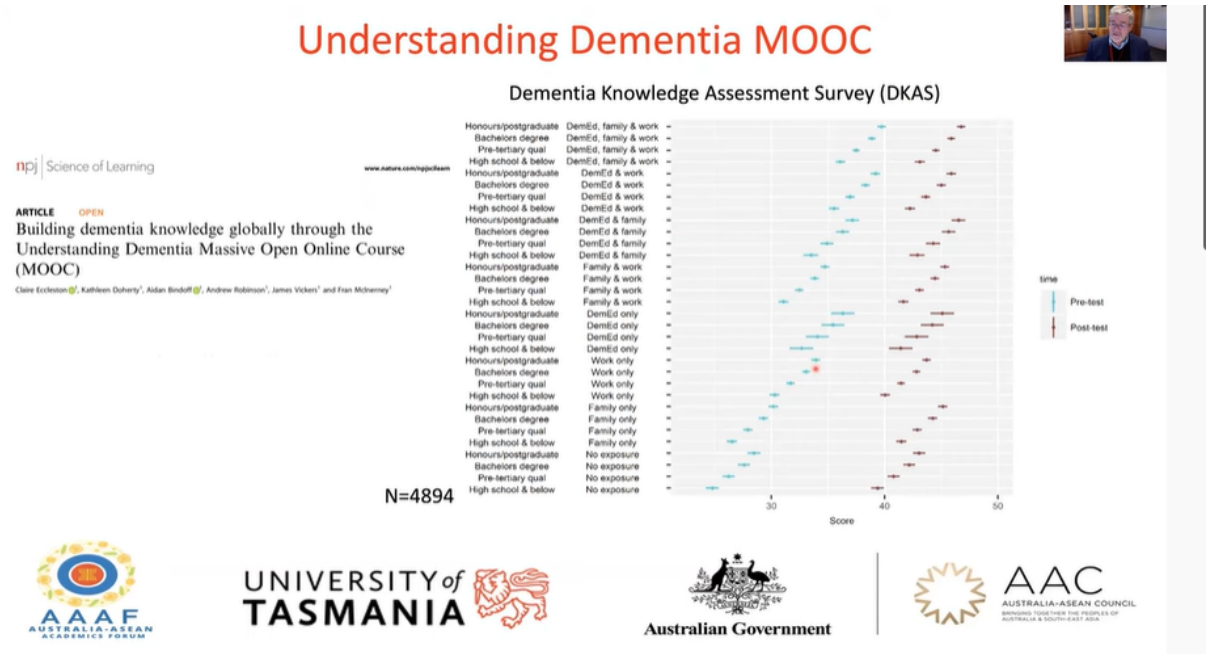


So we also again we try and do a lot of research off the back of back of the MOOC so some of these things involve looking closely at the feedback surveys that we get when people complete uh the MOOC. And when we asked them if they'd already applied what they'd learned the vast majority, 98 percent, agreed or strongly agreed that they're already implemented changed. Again, a couple of quotes from that feedback about how people actually did use that information usefully.

Because we do we are interested in dementia knowledge but we are interested also what we call dementia literacy which is the use of that knowledge for a very useful uh end as well too so that's some of where our research is currently focused.

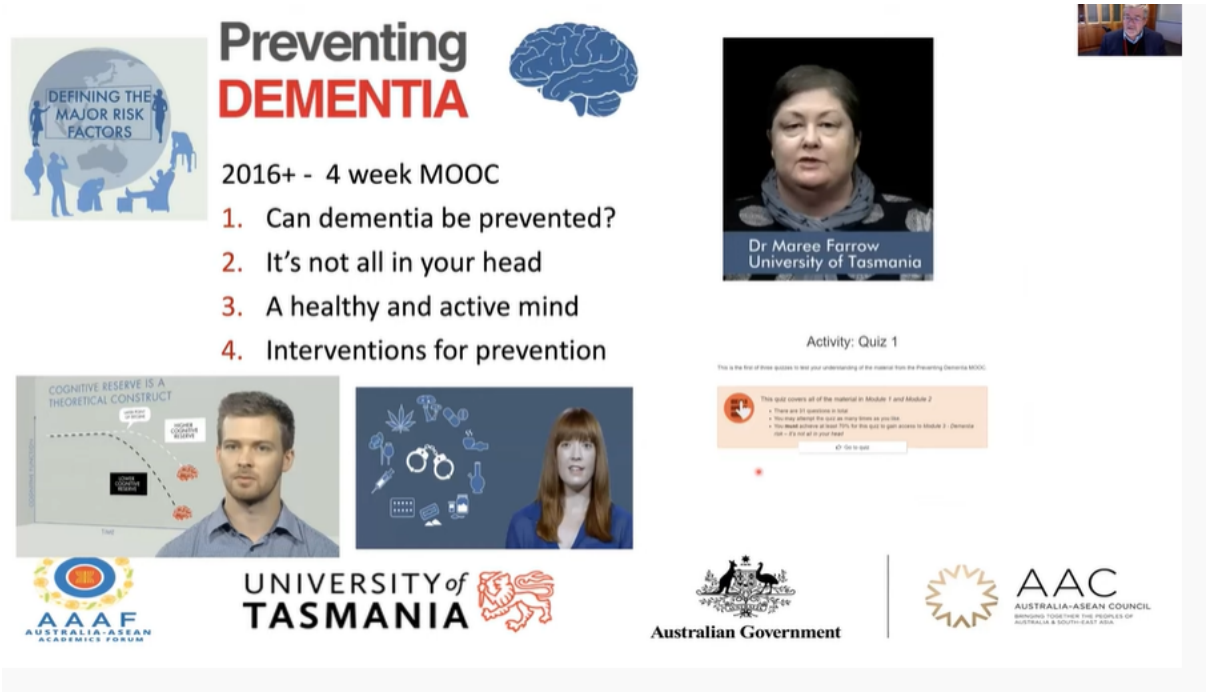


We are also looking at translating the MOOC into other languages this is an example of our work we're doing with a university in the Czech republic Macerik University uh where they're in fact doing the translation of the MOOC into the Czech language that really just arose out of collegial connections that we had in the in the Czech republic. We also too have staff in the in the Wicking Centre who could speak Mandarin so we're also uh in the process of translating all the text and the subtitles for our videos uh into to Mandarin again for a release through Asia and China.



Another example of the sorts of research that we do try and measure people's dementia knowledge uh before and after undertaking this MOOC and we developed something called the dimension to knowledge assessment survey or DKAS. And this is just an example you know use of close to 5 000 participants where we looked at their educational background and also their relative exposures to

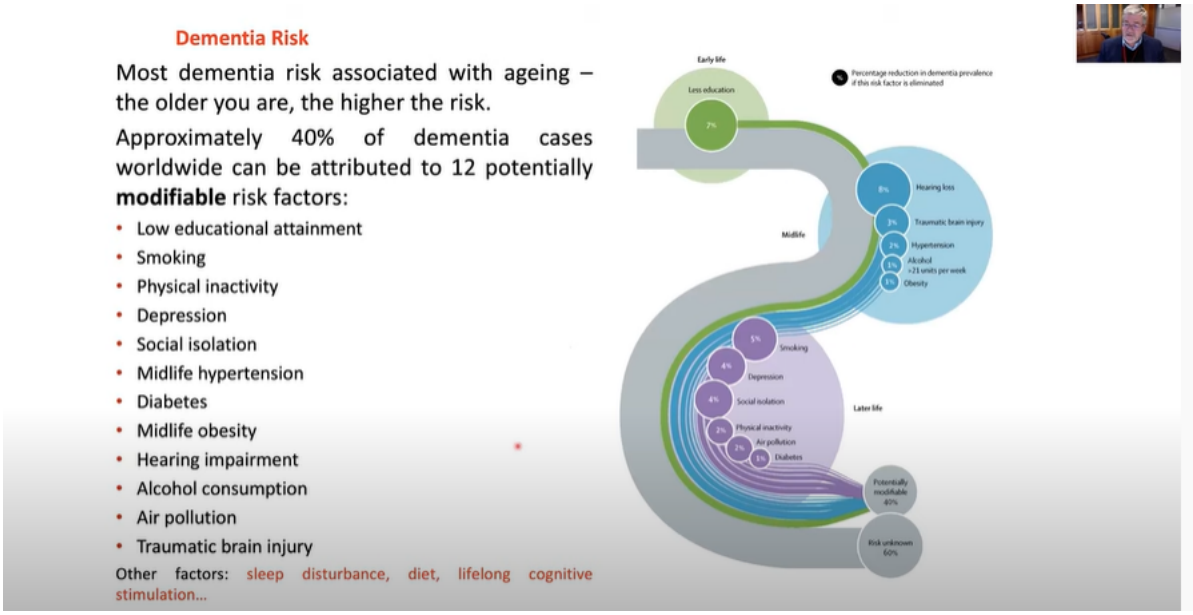
dementia from no exposure say to family through their family or through their work or through education and then combinations of that to see how that played out in terms of their baseline knowledge of dementia. So you can that's shown here in sort of the teal colour so this is where people started off in their knowledge and this is where they ended up after undertaking the MOOC. And really for most people who uh have to have some serious interaction with people with dementia you really want them up into this space. So you can see after doing the course that that there was this you know I guess quite substantial increase in dementia knowledge it was more so for people with very little exposure to dementia previously. If you tended to have more education too then then that was higher. But as you had more combinations of exposure and more education than your baseline knowledge was greater and the magnitude of change that dementia knowledge was also smaller compared to less exposure to the condition previously.



So that's the understanding dimension move we also have another move we developed in 2016 that related largely again to this idea that there are risk factors for dementia that are potentially modifiable. Most of your risk of dementia isn't modifiable it is associated with aging, genetics also plays a big role. But there's a suite of factors that we think might be important in terms of modifying potentially modifying the risk of developing dementia. And these uh with myself these are three t colleagues in the Wicking centre Marie Farrow, Shannon Klickovic and David Ward and we collectively developed this MOOC with the assistance of a range of experts in this area of research.

This MOOC was divided into four modules. The first one really was around can dementia be prevented this actually did include learnings around epidemiology or understanding risk. So ends up being quite a I guess substantial opportunity for people to understand what uh how you study populations and how risk is manifested in various health conditions. The second module was about how various physical factors might affect your risk. The third module really was about how keeping your brain active and engaged was also important for risk. And then the fourth module was really an overview of research across the world that we're looking around about how we might intervene to reduce your risk.

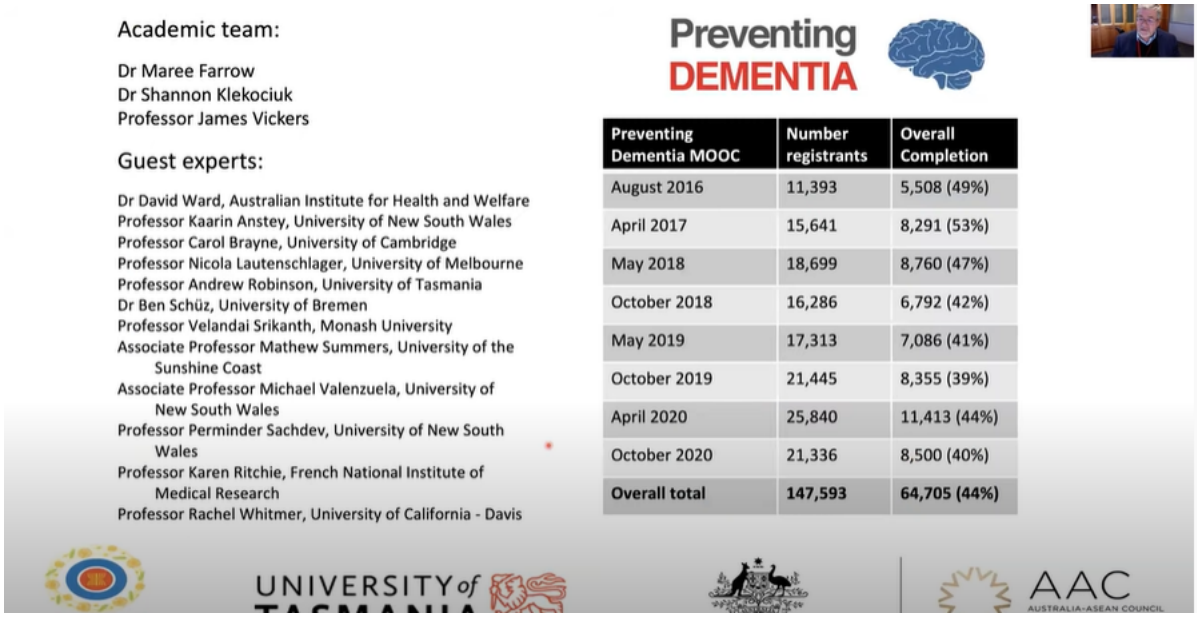
We also became a little bit more sophisticated in the content I suppose for this for this MOOC as compared to our earlier MOOCs. So we had more infographics and animations and things that were used throughout the course.



Let's see this relates really to a what's a fairly new thing in dementia research is this understanding commodity modifiable component of risk and very influential publication, a Lancet Commission into dementia, determined that really if you looked across all of these factors if you could get rid of all of these modifiable risk factors or remove them from being risks then we would have 40 percent less cases of dementia globally. There are 12 modifiable risk factors that we're fairly confident about and these ones are listed here. One really interesting one for this audience is that the less education you have earlier in your life so lower educational entertainment earlier in life, the higher risk you have in developing dementia later in your life.

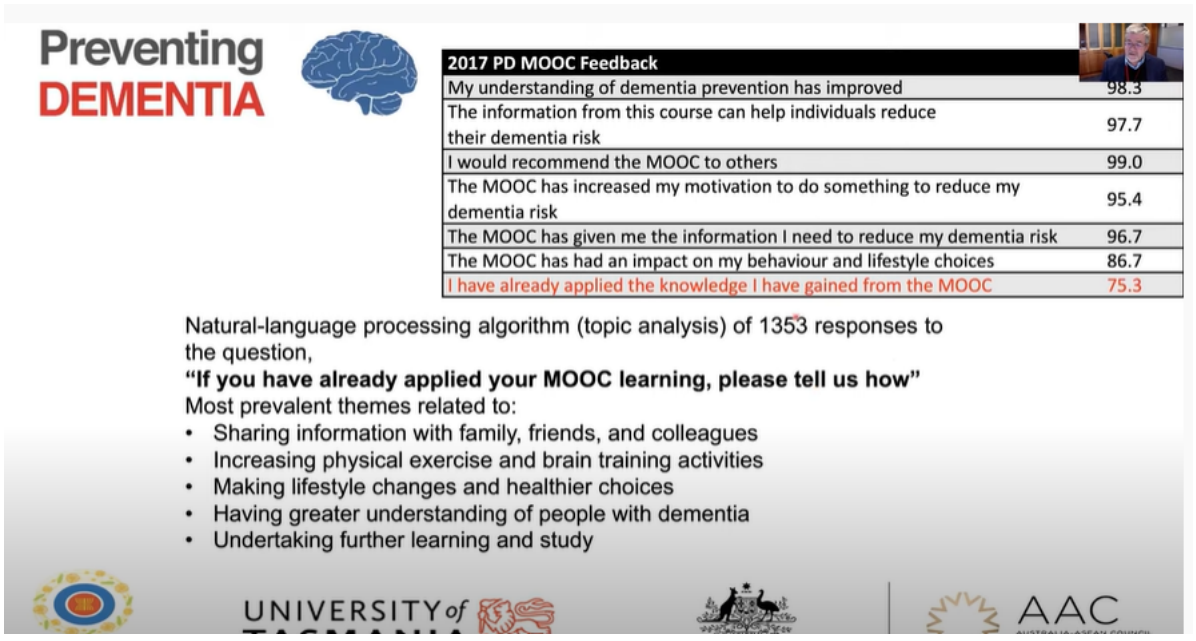
But some of these relate to I guess vascular health, smoking, physical inactivity, hypertension probably also obesity and diabetes, depression particularly in later life is a risk factor for dementia, hearing impairment this is a relatively new one that particularly hearing impairment, losing your hearing in midlife does increase your risk of dementia. Too much alcohol is not good. Another new one is air pollution exposure to air pollution also seems to be a risk factor for dementia and then there are other uh I guess health conditions such as traumatic brain injury which might increase your risk. There's probably a whole bunch of other risk factors too that have a have a role and I've listed some of these down the bottom and these are a focus of quite a lot of research across the world.

The infographic from the Lancet commission on the right shows that some of these uh risk factors are more important at particular stages of life so again in early life less education you have might account for about seven percent of dementia cases later in life. In midlife again there's a range of factors you can see here hearing loss turns out to be quite a significant factor and also an interesting one because it is also one that's in many ways easily treatable by the use of a hearing aid. Some of these other ones can be uh hard to avoid or do something about. And then some of these other factors become much more important in later life. But if you added them all up we think that potentially modifiable component of risk is around about 40 per cent and that's what the MOOC largely focuses on.



So again the main people who developed the MOOC up the top here also now David Ward who has since left the Wicking Centre and works at the Australian Institute of Health and Welfare in Canberra. But we did use a lot more international experts in this MOOC because we didn't while we're active in research in this area, as many of these others have actually spent a lot more time on looking at dementia risk in their own in their own work.

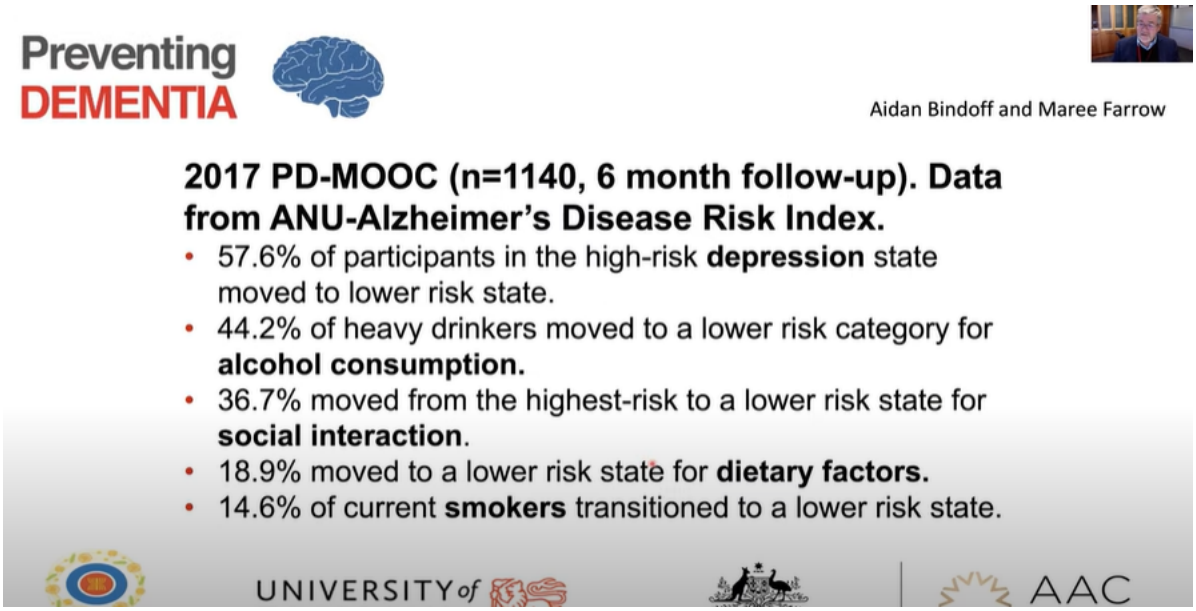
And here are the stats on the numbers of people who have undertaken the preventing dementia MOOC the number of registrations again this tends to be going up over time and here are the completion rates which are actually more which is much a bit higher than what we found with the understanding. And similar to the understanding dimension, about three thirds of uh registrants are from Australia and about one-third from overseas.



Again we do a lot of surveys and research through the through the MOOC as well too so just to show some of the things that we find out about in the feedback. And again what's quite interesting is that

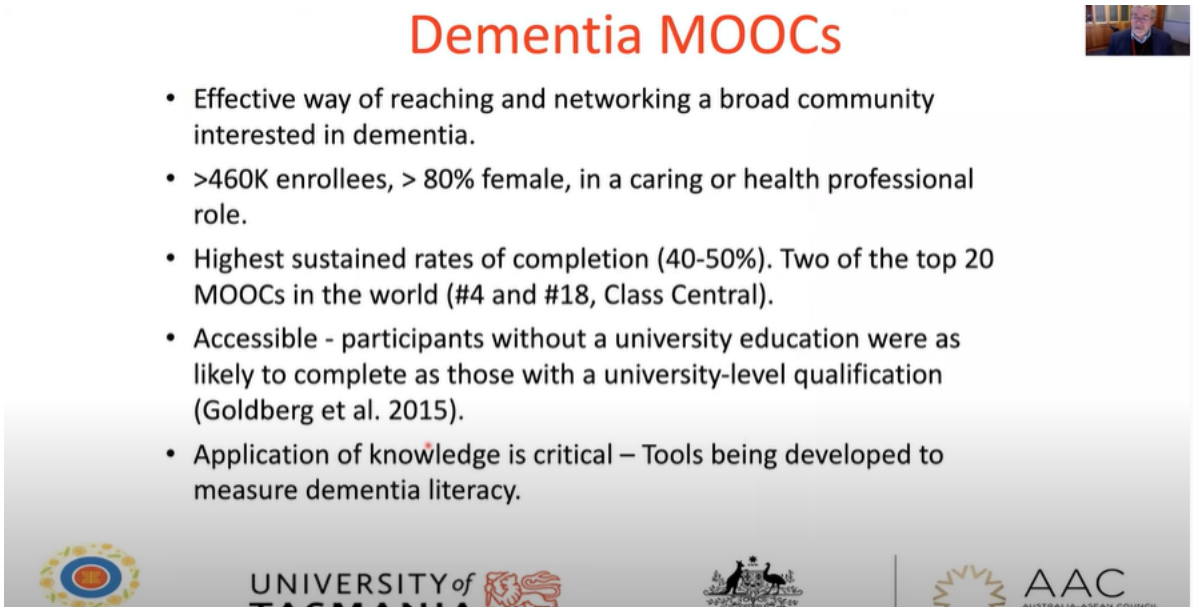
people have started to apply that knowledge they've gained from the MOOC in their own health and lifestyle choices which is interesting because then where I guess we're moving from looking this is an educational offering that not only uh develops knowledge, but helps to motivate people and guide them in behavior change if you like so that they might actually indeed hopefully reduce their risk of developing dementia.

We also look at what they say about the MOOC and in particular responses to the question if you already applied your mood learning please tell us how so we did some topic analysis of this and so what's nice is they share the information family friends and colleagues. They then also look at some of the changes in their own lifestyle that may indeed play out in terms of their own risk. And what was also nice too is that help them with a greater understanding of people with dementia so again tackling the stigma of dementia.



We've looked also at people at some time after they've finished the move this is an example of a study run by Marie Farrow and Aidan Bindoff and this looked at people come back to people six months after they've finished the MOOC and then asked them about a number of those areas of risk. And not to go on too much about this but basically in a number of areas, that people have moved from a from a higher risk state to a lower risk state. So those people that big at the beginning MOOC were in the high-risk depression category if you like they move to a lower risk state 44% or so heavy drinkers move to a lower risk category around 36-37% moved from the highest risk to the lowest risk state for social interaction. People were improving their diet. What was really quite remarkable was that people who were smokers on the back of doing the transition to a lower risk state. So again it's back to this interesting idea that you can use these educational offerings to guide useful and healthy changes in behaviour.

We're also using this uh MOOC as the vanguard or a really important element of a public health program we're running in Tasmania called the island study linking aging and neurodegenerative disease. For this one we've recruited just over 13 000 Tasmanians over the age of 50. so it's quite a lot in terms of the size of Tasmania which only has a population of 500 000 or so people. And we're using the MOOC and some other tools to try and guide people through that process of changing your lifestyle and lowering your risk of dementia. So this is quite a long term study probably will last about 10 years or so and now we're looking to see how we might adapt this to run something similar nationally in Australia and internationally as well.



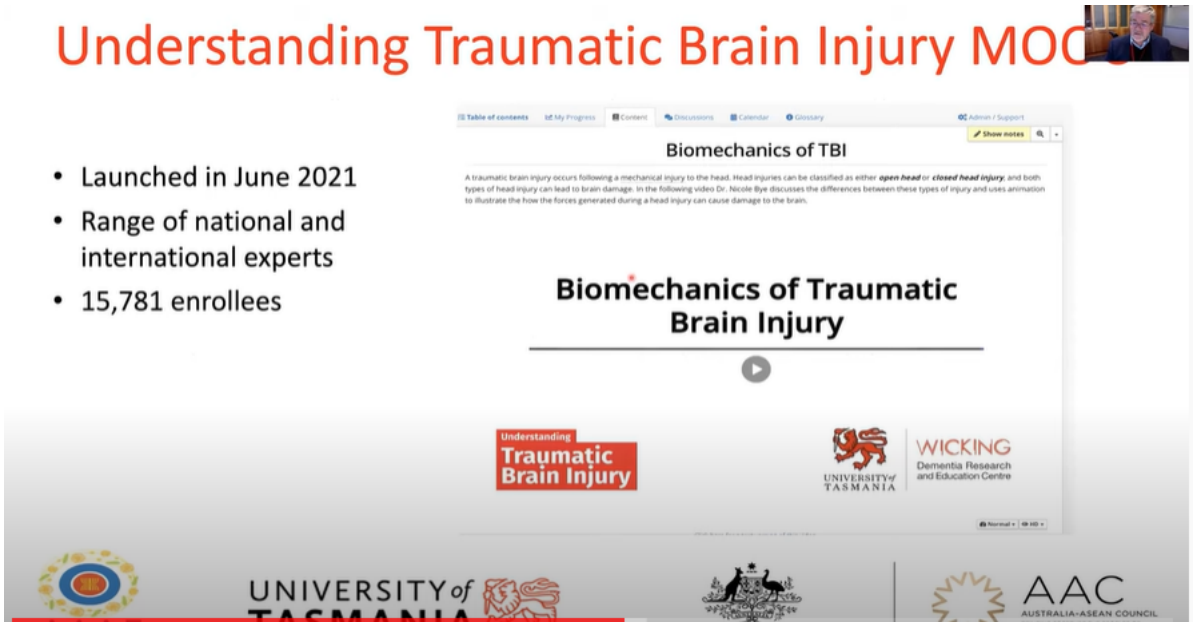
So in summary of dementia MOOCs what we found is that they are an effective way of reaching substantial number of people affected by dementia and also what surprises also help them network with each other and support each other in their variety of roles. Across the two MOOCs we're getting close to 500 000 enrollees or registrants. By and large most people who do the MOOC are

female so 80 per cent or so in female and they're in a in a family carer role or in a health professional role.

We have the highest sustained rates of completion probably of any MOOC throughout the world and there are sites that rate MOOCs based on feedback from participants and at the moment, in these two MOOCs uh the understanding benchmark is number 4 and the preventive measurement number 18 in the in the world so again that's quite remarkable given that there are more than 15 000 or so MOOCs currently available.

As an example also of the research that we've done we've looked at accessibility and we've found basically people who do the MOOC who have a university education or not basically have the same completion rate so if prior education didn't seem to be to be a barrier. And this was good because we did try and design the uh MOOC to be broadly accessible and relevant to people with a variety of different educational backgrounds. And I guess at the bottom line is if you were somebody who had access to the internet and could do social media like Facebook then you should be able to uh access and make your way through this through this MOOC.

Still what we think though knowledge is a good thing, obviously and that is succeeding at that but what we need to know about is how people might apply that knowledge. So we develop in our research teams we're trying to develop tools to actually measure how that knowledge is applied uh practically either in the care of somebody with dementia or indeed in that area of trying to reduce people's risk of that of dementia.



We've also expanded into other MOOCs there was a bit of local expertise in traumatic brain injury so just a couple of weeks ago we launched the understanding traumatic brain injury MOOC traumatic brain injury is a little bit like dementia and that there's a lot of people affected by the condition, but it's actually pretty poorly understood throughout the community and also really amongst a range of health professionals. So we developed this MOOC to give people a basic understanding of this condition and that's just really a snap from the beginning of the beginning modules of the of this MOOC.

This again does involve a range not just us a range of national international experts in this area and we've just ticked over 16 000 enrollees. It's still open for enrollment so if you may be interested you can find it on our Wicking Centre webpage or if you just google understanding terrain brain injury MOOC you'll find it available.

So those are the three courses that we offer but we have also moved into the area of formal degrees now largely this is in Australia we are trying to develop strategies now to get more uh reach into other countries. But by and large most of the people who do our formal degrees have been Australian students. And these are clustered into undergraduate degrees so we have a diploma associate and bachelor of dementia care available we also have a relatively new offerings the diploma of aging studies and services which is more targeted looking at aged care more broadly and how services might be organized and coordinated for individuals.

And then the Australian government has introduced very short uh university certificates they're called job ready certificates. And so we've modified some of these offerings now to also offer a certificate in aged care services. We've been doing this undergraduate degree now since 2012. Just last year though we introduced a suite of courses at the postgraduate level so now you can do a graduate student, graduate diploma, and master of dementia.

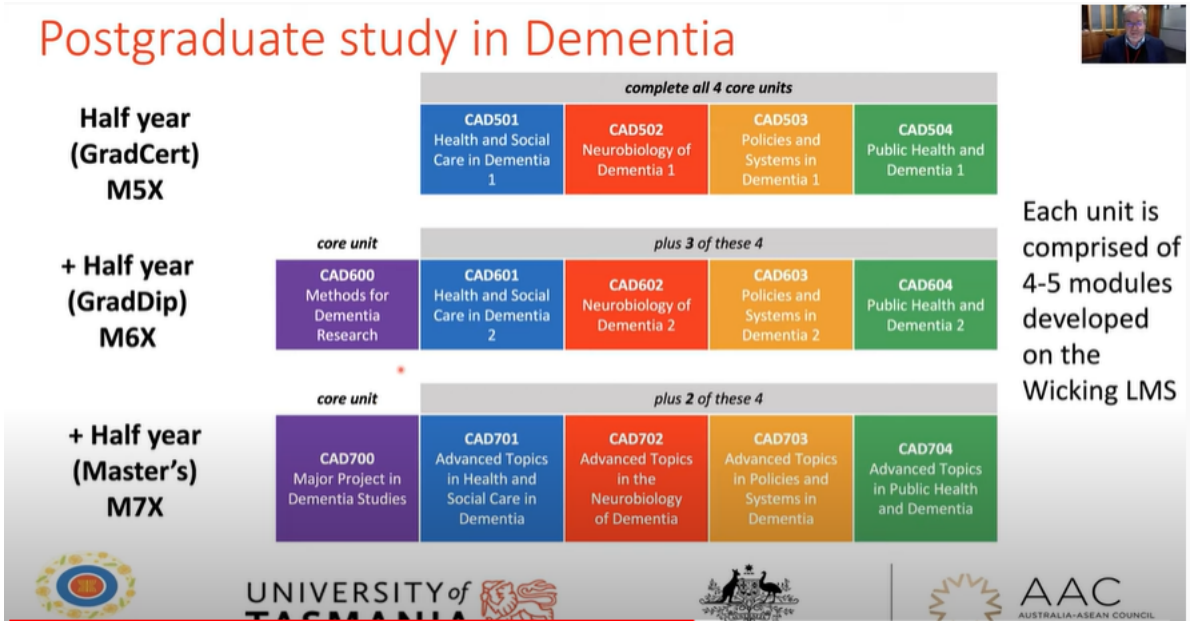
It is fully online uh in this case we largely use the university's current learning management system and we have students across all Australian states and territories. The majority of students are doing this on a part-time basis we have very few students doing this on a full-time basis and largely because as the picture shows here, our major demographic for this degree again are women and particularly women in their 40s and 50s and they're often juggling doing this degree with working, looking after their family and so forth.

We do have also designed some of the early parts of our undergraduate degree again hopefully to be quite accessible so it does include foundational support for online learning that students can undertake. So a lot of that is about understanding you know a university course and how you find your way around the learning management system and you know how to do various tasks.

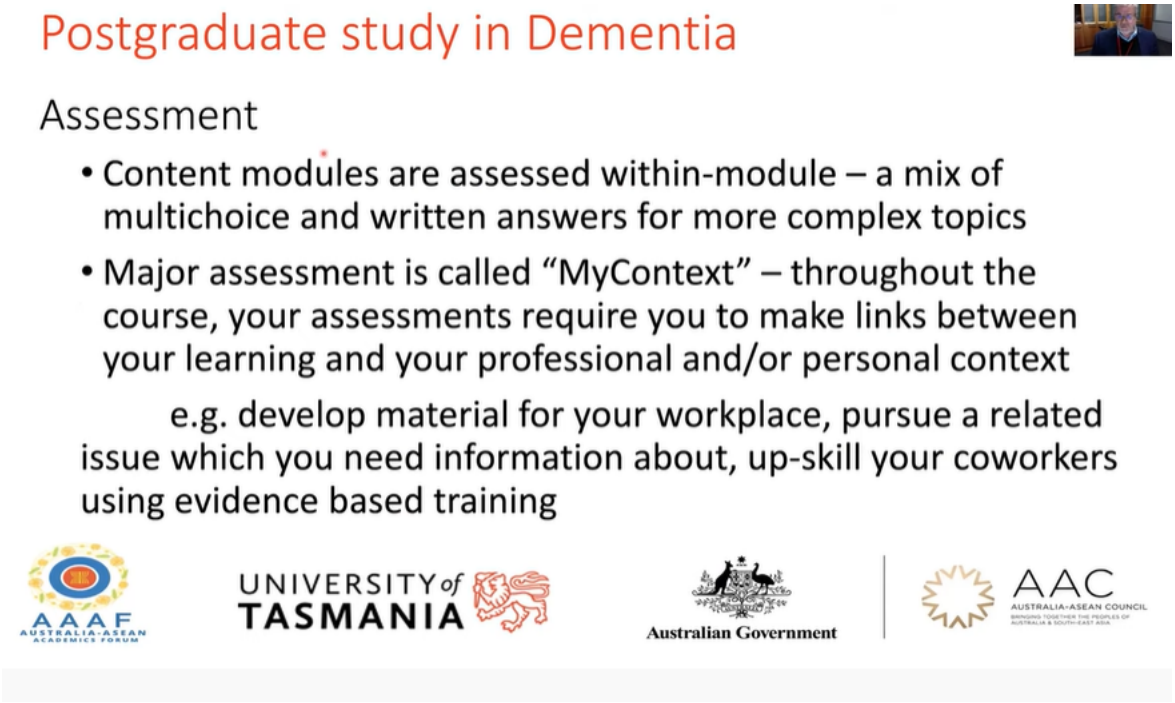
We decided also to in terms of design uh to not have uh end of unit exams, so all of our assessment is within the unit and takes largely the forms of quizzes activities short answer question tests and assignments, essays. And we're up to close to 1300 or so graduates and most of these have taken the diploma of dementia care which is equivalent to one year of full-time study.

We asked them again what their motivation for undertaking more formal study was to learn about dementia, and effective care, tame and qualification for career advancement and to achieve more workplace recognition. Now in Australia though the interesting thing is in Australia there are no well quite recently there really weren't any university degrees around aged care and particularly not in dementia. Most people who work uh in aged care either qualified nurses or they're aged care workers who've done some kind of vocational education skills-based training. So by completing one of our courses doesn't necessarily qualify you for a particular job, but what we're finding is that people who are involved whose jobs are already involved in providing dementia care that undertaking this course does seem to improve how they provide that care. And many of our graduates are out there also uh applying for higher levels of positions within their organizations or many of them have developed into trainers or aged care consultants as well too helping people to navigate aged care services particularly for dementia.

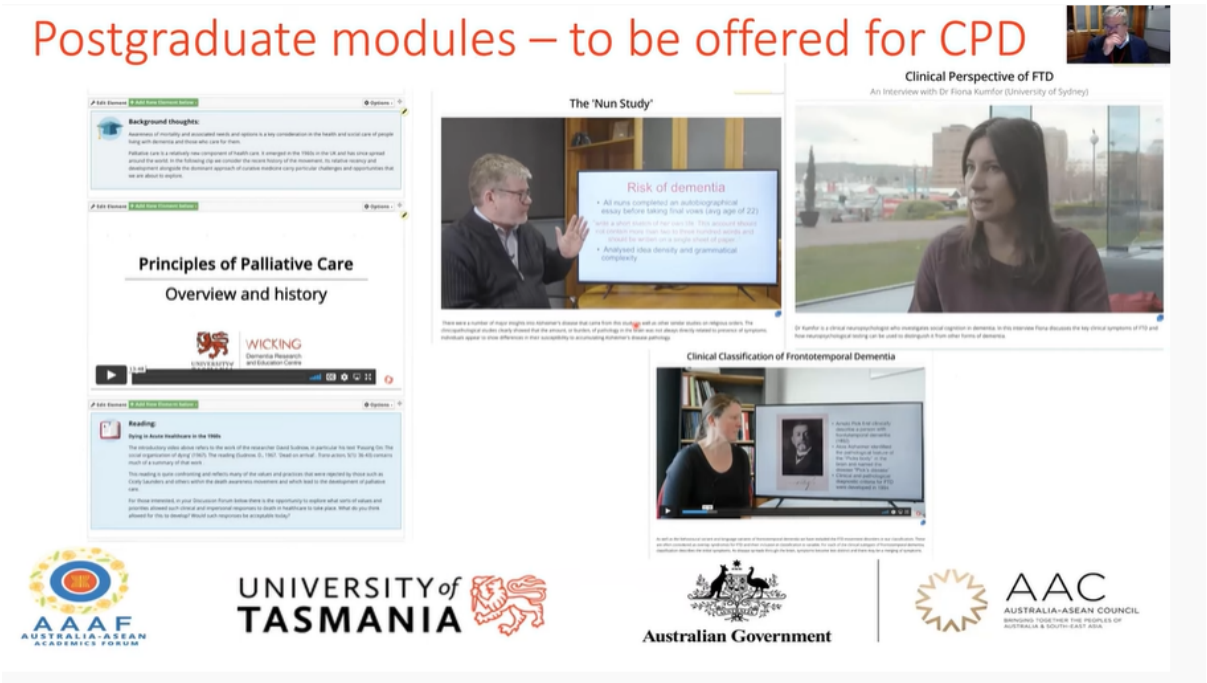
So we're hoping that it'll be recognized in some way more formally at some stage but we also I guess we developed this course because we knew that people were working in the sector did require this additional education.



Getting towards the end now too this is just an example of our most recent offerings which is the postgraduate qualification in dementia which could be four units as a graduate certificate, eight units which is a graduate diploma, or 12 units which is really equivalent to one and a half years full time which is at the master's level. And what we've done with each one of these uh units is actually we've actually constructed them of more modular content so each of these units is comprised of four to five modules uh they're self-contained and they've also designed and delivered on our own learning management system. So our goal there isn't then not just to offer a postgraduate degree in dementia, but also to offer those modules eventually for professional development purposes. But also so people can they're not quite ready to undertake a course they can do them individually and collect them together and then they can be used as credit towards uh towards this towards this program as well too.



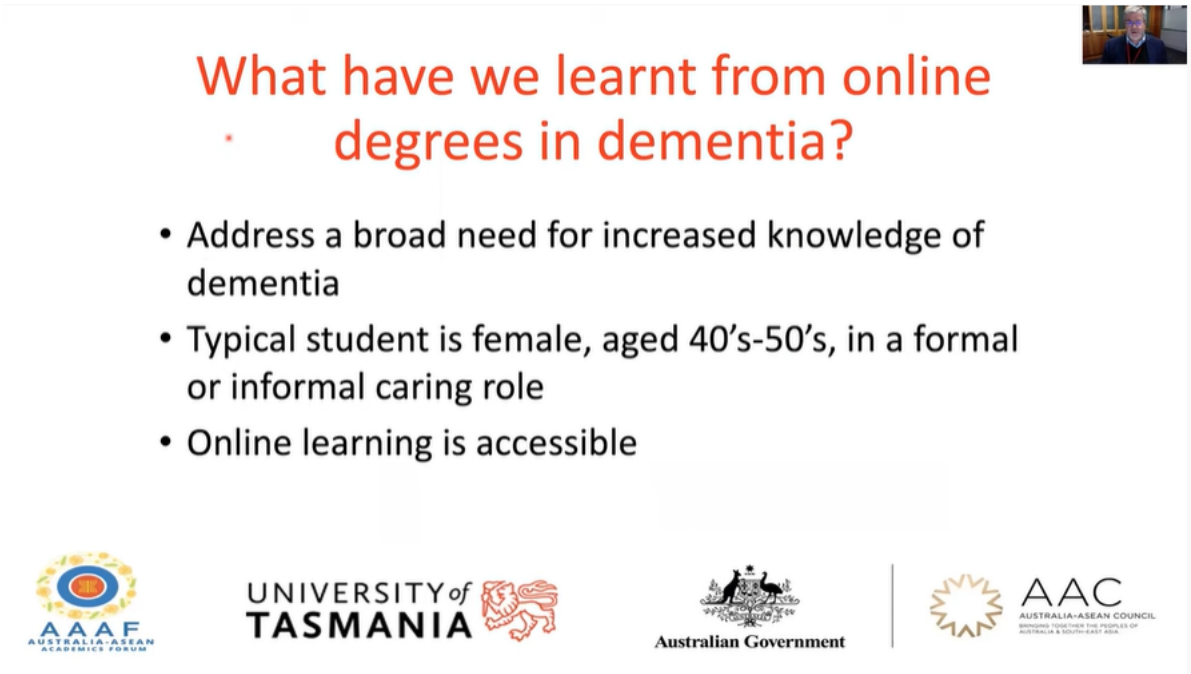
So these modules are designed so they've got a lot of within module assessment so this is normally a mix of some sort of multiple choice and or short uh written answers for more complex topics. There's a major assessment really for each unit that people do and this is called *my context* so this is then where you take the information knowledge uh that you learn from that that that unit and then apply them in uh in a meaningful way to your own context be that a professional one if you're working in aged care or with people with dementia or a more personal one if indeed you're doing the course because there's a for example a relative who may have developed dementia. So hopefully we again we make uh the assessment contextual and interesting. But again we're trying to avoid end of unit exams.



Just some snaps from those that uh postgraduate course some examples of what we do in that course again a lot of it is video based. Much less uh interview style we have a little bit of that in some of the modules uh this is a little bit more didactic if you like where it's normally one person talking to two camera often with a an aid there with providing the information. Sometimes these also involve interviews with experts for example Dr Kumf here is a clinical neuropsychologist so she was talking about social cognition in in dementia. So again we try and rely on external expertise where it may be as much as possible.

But over on the left here just shows an example of how we develop this on our learning owned learning management system. You can see even these modules in of themselves the design is quite modular. You can add different kinds of elements be that kind of information elements or things people should be reading about or it might be a video. But we have also designed this learning management system so it's really actually very easy to use and that's practically quite useful when we have clinicians come in who may want to add some content they don't necessarily want to learn the complexities of the learning management system. But this just makes it very easy for them.

And indeed because of COVID-19 and the various restrictions that we had in other parts of our college, particularly, our school of medicine we made available this learning management system so that we could develop content quite quickly with clinicians while people were not were not able to get together for face-to-face content.



So what have we learned from doing these online degrees? Well we know that this if we didn't know before we know it now that there's a broad need for increased knowledge of dementia people who work uh professionally with people with dementia don't necessarily feel equipped with all the all the up-to-date contemporary information and knowledge required to provide the best quality care. Our typical student for pretty much anything we do is female in their 40s 50s who are either in a formal or informal caring role.

I guess the other thing that we have learned really that online learning is accessible now for some people who come and do our free courses or degrees they may well already have a lot of experience

in tertiary education and online learning, but we also have a substantial number of people who for them this is their first experience of university level learning and often their first experience of doing this online. And that's actually quite pleasing as a group of educationalists I suppose that this may well be an introduction for them to then pursue more online learning.

My final slide I just like to acknowledge that this work was not done by me by and large it was actually my great colleagues and also and students involved in research uh in the in the Wicking centre also again the while the working centre does have a number of staff involved in generating this material we do also rely on guest experts from around Australia and the world. But also what's really important too is we do have material that features family carers and their experience as well as people with dementia as well too and these are really quite important learning experiences.

We're also grateful again we do a lot of these large cohort studies so and the people doing the MOOCs who engage in research so an advantage of our approach is that you can get these studies that involve thousands of people which otherwise might be difficult to recruit.

And in our research and some of our educational offerings are supported by the group down here. So thank you very much for listening I might stop sharing at this point and I guess see if there's any questions Monica.

Monica

Thank you very much, I'm sure that there will be questions I think looking at the comments you might be likely to have half of your questions around dementia and half of them around the uh the online learning approach that you've that you've taken. So we had two as uh usual folks what I'm going to do is just ask you if you're if you're prepared to ask your own questions but if you let me know in the chat that you are wanting to ask a question so we had one from [internet glitches] like to ask your question of Professor Vickers

Meredian (Brunei)

Hey good afternoon uh Professor Vickers I'm Meredian I'm from Brunei. I have questions [inaudible] problems experienced by people with dementia in time of pandemic thank you.

Dr Vickers

Yes so the pandemic was has been a very difficult time for people with dementia. People with dementia whether they live in their own homes or in a nursing home already are quite become quite socially isolated and that's partly because of the symptoms that they're experiencing but also because uh often they're a bit reluctant to go out in the community because the stigma around dementia. So some of that's internally driven and some of it's because the external environment.

Now with the pandemic there's been you know lots of examples across the world where people with dementia became more isolated and the real concern there is that social isolation does seem to push the disease process along. So we're a bit worried that we're going to see higher rates of death of people with dementia so that's a consequence. If we think about the pandemic, itself well again in many places across the world one of the big areas uh affected negatively, has been around in aged care so in aged care homes in Australia in particular they're often not great environments for controlling infection. So if somebody goes into that facility be that a worker or a person living there develops an infectious disease it quickly spreads within that environment. So I think I'm right in saying that the most deaths that we saw in Australia due to COVID-19 were in residential homes. So and then on top of that, the last thing is that it also seems that people with dementia are much higher risk for a negative outcome so that is as if they get infected by COVID-19 then they've got a higher chance of dying and again that's probably relates to how that disease affects their brain so they're much less mobile and therefore more susceptible to again a negative outcome if they get infected. So people with dementia were especially vulnerable to the pandemic.

So all those things aren't great but probably the one we worry about mostly is that again this effect of additional social isolation on people with dementia because it's likely to push their disease along.

Monica

We had another question from Leewan, were actually several questions one which was about assessment so I don't know whether you feel that that's been answered sufficiently but there were several questions that you had so would you like to speak to Professor Vickers about those?

I'm always worried my pronunciation of names are so poor that people may not know that I'm speaking to them. So this is Leewan I think Hu? Or perhaps I can ask the question for this person. So Leewan said they would like to know more about the way you assess more completely and the way you build medical terms that so most people can understand the medical terms in your uh presentations.

Dr Vickers

Yes certainly so those are really important questions. So throughout I guess maybe this is mainly about our MOOCs so through the MOOCs we have short quizzes and they're often a barrier that you have to get through to open up the next module. That said you can repeat them as much as you like to get the required pass mark which is 70 per cent to move on. We were a bit worried about the use of the quizzes whether people would just give up at that point but in our analysis of how people progress through the MOOC it doesn't seem that they drop out because of that.

It is a it is also really important how we provide again knowledge and uh education around many of the terms that are frequently used. I suppose in a short course about health and so we spend a fair bit of time at the beginning of the MOOC going through those. We also in every MOOC have a built-in glossary, so if a term looks unfamiliar then people can look up the glossary which will give an explanation.

Also for all our videos too sometimes people have a bit of trouble with the videos and some of the content if it's unfamiliar so we also provide a transcript to every video so that people can take that away download print it if they like and then can have more time to uh to look at that and see if they can uh you can work out the meaning of various terms as well too. But yes we do hear that sometimes people struggle with the terms especially if they're not at all from a health background.

Monica

Yes having those multiple ways of getting the information clearly

Dr Vickers

That's right yeah you're right you have to keep circling back often and making sure people understand those terms before you give them too much more information.

Monica

Adriany has got a question?

Adriany

Sorry for the unstable internet connection but can you hear? Thank you very much for the very wonderful presentation Professor Vickers. From the presentation I can learn many things but one of the things that actually I can learn is that it is a very scary disease for a lay person like me I'm actually my background is not health but uh humanities. That's why if it is possible I'd like to ask questions dealing with you know practical things as to how to avoid this dementia especially for uh us teachers. As you already know that during this pandemic uh situation we are sort of forced to be in this particular situation where uh we are isolated and then also teachers they tend to you know like multitasking and things like that. And then also at times probably you feel like depressed you mentioned that the triggers of this dementia some of them are isolation as well as like the one that I have just mentioned is the depression as well. So I was just wondering if I can ask for it for your insights as to how we avoid these things for us actually language teachers or teachers in general. Are there effective ways to avoid that kind of a scary disease? And if it is possible other like sort of mobile applications to like…I remember that you mentioned about online gamified learning stuff are there applications about that that we can play on our mobile phones at home in isolation to avoid this dementia? So yeah this is related to your presentation thank you very much.

Dr Vickers

Thank you yes so we do think that there are these 12 or so factors that are that are that are important in terms of risk. Now again many of these cluster around physical factors so that would suggest the more exercise that you get keep your weight down, treat your hypertension or treat your diabetes is important. Another one though really interesting one is around mental stimulation so what we don't think that if you do the same task over and over again let's say for example sudoku or crossword puzzles you often get really good at doing those activities, but it doesn't necessarily

generalize out into other areas of your sort of cognitive capacity. What we what we think it's more like complex mental stimulation. So this is doing things that makes you your brain work hard and that again it could be around education you know going out there and doing another degree or learning another language or something like that. But also then switching tasks so not staying focused on doing one thing but doing something that's multifaceted.

There is a lot of interest in computer games and there's a lot of research that's been conducted and there's quite a few companies out there that provide computer games that they say will reduce risk of dementia. But again the evidence isn't particularly strong that they are protective. It's if you do these computer games you probably get really good at doing the computer game but it may not necessarily again translate into having better memory or higher cognitive functions. But that that field is changing all the time there are glimmers of some interesting results when people are getting in these computer games trying to get people to use their brain in a complex way. So not just doing one thing through that game it's doing a number of different things and then shifting the cognitive areas shifting those uh all the time as well too. So your brain gets much more of a general workout. So I don't think we've got it now but I think I suspect in a few years' time we're likely to have computer games that that will likely provide enough of that complex mental stimulation.

But still this just I guess emphasize there probably many other easier ways of getting that flex-mental stimulation out there. So getting more education learning another language learning a musical instrument something like that some kind of real world interventions might be just as useful.

Monica

Thank you very much Professor Vickers I've got a question that that I've been going to sort of take my chance but I'm going to ask you guys if I can I'm interested in the work that you and your team have done to make your material accessible to lots of people. So you know to make to simplify language presumably and one of the ways I imagined is to have those various ways that you've talked about presenting information. So would you mind a little bit about that?

Dr Vickers

Yeah so that's something we've spent you know a lot of time focusing on and I would say we were probably not that great at it when we started but we've got pretty good at that as time goes on. So you're right some of this is about making sure that when people are talking about their research that they're interested in that they avoid a lot of the technical language and try and explain things in simpler terms. So this is we actually work out the questions and then we ask them in a certain way that they their response is digestible. We spend a lot of time coaching uh people who are involved in in producing that material.

We thought we would have more problems with complexity of the material than what we've experienced that really the main reason for example that people stop doing the MOOC is not because they find it really hard in terms of say the medical content or you know the terminology. It is often because life gets in the way so you know they've got a busy life they've got families to look after or work and that turns out the main reason why people abandon I suppose doing the MOOCs.

But yes, you have to spend a bit of time in design to make sure that your stuff is accessible. Explain as much as you could possibly can about the underlying terminology, health terms that that you use and then in your video content in particular make sure everybody's coached really well to be presenting you know kind of almost the lay version of that area that they're interested in. At times

this just got really quite difficult for because I remember when we were had material about epidemiology which is the study of populations and the understanding of risk so portraying that information we went backwards and forwards quite a number of times with our experts because they would quite easily fall into giving the technical scientific version very evidence-based but too complex. And so we got them we hopefully got motion to the point that they could still give good evidence-based information but in a much more digestible fashion.

Monica

I think that's something I imagine that we could all practice doing in our work.

Dr Vickers

Yeah and I think you're right you have to practice doing it it's not it's not that when you're an academic it's very easy to fall back into talking academically about your material and you're really gotta understand who's your course I think is the other thing again. A lot of people who do our free courses don't have a university education, very limited exposure to formal education so you've really got to make sure you tailor what you're doing to the audience. But you also don't want to lose the people who might come to your courses with the more I guess more thorough understanding of that to be.

Monica

Yes now we also have a question about dementia from [inaudible] you able to ask your question? No it's I think [inaudible] might have left us and the question was quite a difficult one so I think we might miss that one over. But we've got one from Swasti.

Swasti (Indonesia)

Yes I'm here thank you Prof Vickers a very interesting presentation. I'm sorry maybe I left uh some information. My question is how multitasking can affect dementia? Is it bad for us? uh I think multitasking due to relation to the dementia? Because uh I've I have read uh in your presentation that one uh one of uh way to prevent us uh from dementia is to activating our brain and in my perception multitasking is one of one of uh way to activating brain maybe I'm wrong please explain to me.

Dr Vickers

No it's a an excellent question and it's one that not all the scientists would agree on to the answer. Certainly the evidence so far again it's not it's not as much evidence as we would like but it would indicate that if you're engaged in tasks that that have complexity, then your chances of developing dementia are lower. And these were a number of studies did this they looked at people when they looked at retirement when people retired how much they enjoyed their jobs and the sorts of tasks that were involved in their jobs. So if you're in a job that you enjoy and it involves different cognitive things that you have to do and in fact and then you also retire later then this is a good formula for reducing your risk of dementia according to those epidemiological studies.

However there's another school of thought that says that multitasking where for example we might be trying to you know watch something on one screen and do something on another screen while trying to do this other activity over there it produces cognitive load and then when you have too much cognitive load and that's a recipe for your brain not working as well as it should. Now that's there are colleagues who I have who work in that area, they're more interested in how cognitive load impacts children in particular. And I'm not sure I mean I think again it's one where the research there needs to be more research, I'm not sure I would necessarily agree with them because I think the secret element in all of that is that if you're if you're multitasking and you are able to do that without stress then I think that's likely to be a good thing. But if you're multitasking and it's creating stress then that's likely to impact your brain negatively.

Swasti (Indonesia)

Oh okay the keywords is a cognitive load and stress that uh in that person if the person is not feeling stress because of the multitasking so is it okay right?

Dr Vickers

well it's not it's not very evidence-based but my guess is that it would be that would be a good thing to do. But I know there's a lot of fear out there that we're in a world where we're required to multitask all the time and again, we have the devices and the internet and social media. But I would say the science the research that's been done on that is really quite split some people say it's a negative thing some people say it might will be a positive thing but what we do know is that exposure to stress over a long period of time is actually very bad for your brain and is likely a risk factor for dementia. So if whatever you're doing and you have to do a lot of it you're really not enjoying it and it's creating stress,s then I'd say that's probably get not a good not a combination.

Monica

Do we have any other questions that people would like to ask? Let's just give people a little minute to think about that so I had another question Professor Vickers and that was about the again going back to your some of the decision making that you've done around your MOOCs in the development of your online materials I wonder whether you are using data analytics in any particular way? Around you know watching what people are responding to and that sort of thing?

Dr Vickers

Yes so we would love to be moving more in that direction but what we discovered I guess fairly early on is that our data sets for the data we were collecting were quite enormous. So we had we had to go out and employ uh data scientists and statisticians to help us make sense of that so we're probably still at that stage of trying to make sense of the data we've obtained. But where we would like to be going further, and we've got some expertise in the centre, around machine learning uh AI and feedback, and so we would love to move to a situation where we could provide more dynamic feedback to participants. An example of that is we might open up a discussion point for people to talk about their experience with dementia around a particular area and what we would like to be able to do then we get thousands of posts is to have some sort of AI do some sort of analysis of that and then provide that feedback to the participants. Say that you know this percentage of you thought that this was important, and this was important or you found you were talking about this

that or the other thing. I think that's still in the future for us but that's kind of where we would like to be where there's much more dynamic feedback because it's also… what we do to try and go into the MOOC and uh and providing feedback as academics, but we don't have the capacity to be able to analyze that volume yeah on the fly so yeah, it would be great to move more into that world.

Monica

Thank you very much there don't doesn't seem to have been any additional questions added to the uh but perhaps Lou, are you?

Luh Putu (Indonesia)

Yeah Professor Cuskelly thank you so much thank you so much Professor Vickers for very interesting presentation. You are presented about the cases of dementia here across nation I guess but I just wonder whether there is a research done on the case of dementia across profession? I mean what kind of proportion probably less likely to have the risk for dementia? And the second one this is about culture. I mean I'm I'm in the culture in which the social system is very you know close to one another and then also family system also in so in in such a way so that everybody close to one another elderly people live with their family. And the elderly people are fairly needed by the family by the youngers to you know to do some sort of things in their life. For example in Bali the older people usually are very busy with a ceremony sort of things so that very busy and I really do not see many cases around me of old people with I mean elderly people with dementia cases. Is there anything you know to do with a cultural or social system? Thank you so much Professor.

Dr Vickers

Those are great questions. As to professions there's a lot less known specifically about professions individual professions. And what we do know is essentially the more again the more education that you've had at early stages of your life including university education then the less chance of developing dementia. So if you're on a very long educational pathway for your profession that's likely to be a good thing.

Where the evidence is a bit more certain is that, I guess I touched on in my last answer, is that the longer that you are working and as long as you're working with complexity in people or analysis or something like that, and you're happy doing that then the less chance you have of developing dementia. Conversely if you're in a position that you don't like for a long period of time that's not very dynamic then that's likely to be uh have a negative effect.

Now the cultural influences again is really fascinating we don't think largely that rates of dementia are that different between different cultures except for again mainly in the education space. So if again this is really about history I suppose but if you're in a culture or an environment where education is valued and most children don't say go through to year 12 then that seems to be play out in terms of population risk to be a positive thing whereas I guess again historically in some cultures where education may have been less valued and people left school you know in high school with or high school then that that seemed to have an impact on negative impact on dementia risks.

But we do know things like social engagement and low stress are also really look like they're quite important. So again, if you look at cultures with family structures where the elder is well looked after within the family by the children and that they're involved in lots of activities and they're not marginalized then that that looks to be good. But conversely if you are older and become isolated

develop depression not really involved in meaningful activities, then that seems to be a risk for dementia. But it is it is something again it's probably one way we could do with some more evidence but if you if you if you sort of uh correct for what we know about these risk factors and how they're variably present for example in different cultures, then there doesn't seem to be much difference between cultures if you see what I mean.

Monica

Thank you very much Professor Vickerson for everybody for attending today we're almost at 5 30 and we seem to have be finished with our questions so you know it's been a very it's been a fascinating presentation both in the content area in which you're offering your work but also around how that is being done so successfully and I'm sure people will have learned a great deal from the material that you've provided so thank you very much appreciate it thank you very good thanks to everyone for coming along today we will put the recording and the PowerPoint slides up in due course and let you know when those are available so you'll be able to go back over some of the material that that Professor Vickers has provided to us see you again soon bye now thank you.