



Childhood Determinants of Adult Health (CDAH) Study

JUNE 2019

CDAH3 Clinic Work Complete

The Childhood Determinants of Adult Health Study's travelling clinics have now come to an end after being on the road for the past 20 months! We have completed clinics in Tasmania, Victoria, South Australia, Western Australia, Queensland, New South Wales and the Australian Capital Territory. We hosted clinics in 27 locations, ranging from two to nine days in each, and were delighted to meet the 1,568 participants who attended!

more locations and to be able to offer a clinic within close proximity to all, however our budget restraints restricted our ability to offer more locations (and we were unable to visit the Northern Territory). We therefore would like to specially recognise and express our appreciation to those participants who travelled great distances (>50 and even up to 1,200 kilometres return in some cases!) to attend their closest clinic location, some even traveling interstate. We would further like to thank everyone who may not have been able to physically attend due to distance or timing but who have continued their involvement in the study through undertaking our surveys.



Thanks to Shelley, who brought in her original 1985 certificate to our Toowoomba clinic!

The team and I are so grateful for the commitment and effort shown by all attending participants, through sacrificing several hours of your weekday/ weekend and often travelling significant distances, all to benefit the study and further this important research. Through taking part in clinic testing, people volunteered their body, their strength and fitness, their blood, and underwent memory and cognition testing - all whilst caffeine deprived!

Of course, we would have loved to have been able to visit

The completion of this ambitious project was only possible due to the exceptional team involved in the project. Firstly, this consisted of a core team based at the Menzies Institute for Medical Research in Hobart, who have worked tirelessly not only being a constant contact point for all participants and performing regular phone surveys and bookings, but who were also instrumental in the planning, organisation and execution of the clinic set-up.

Secondly, we were fortunate enough to employ dozens of fantastic field staff to work in each state that we visited. The clinic undertakes a range of complex testing so requires a multidisciplinary team of specialists. As the Fieldwork Manager, I feel fortunate and



Phlebotomist Gail at work in the Gympie clinic

privileged to have worked with so many people who showed such a high level of professionalism and commitment to the study, and so would like to personally thank all those involved in undertaking the clinics over the past two years.

Coming to the end of this phase of testing, I feel a great sense of accomplishment and excitement for the future of this study. This sentiment is one which has been expressed to me by participants at clinics time and time again. Your continued involvement and interest in this study are highly

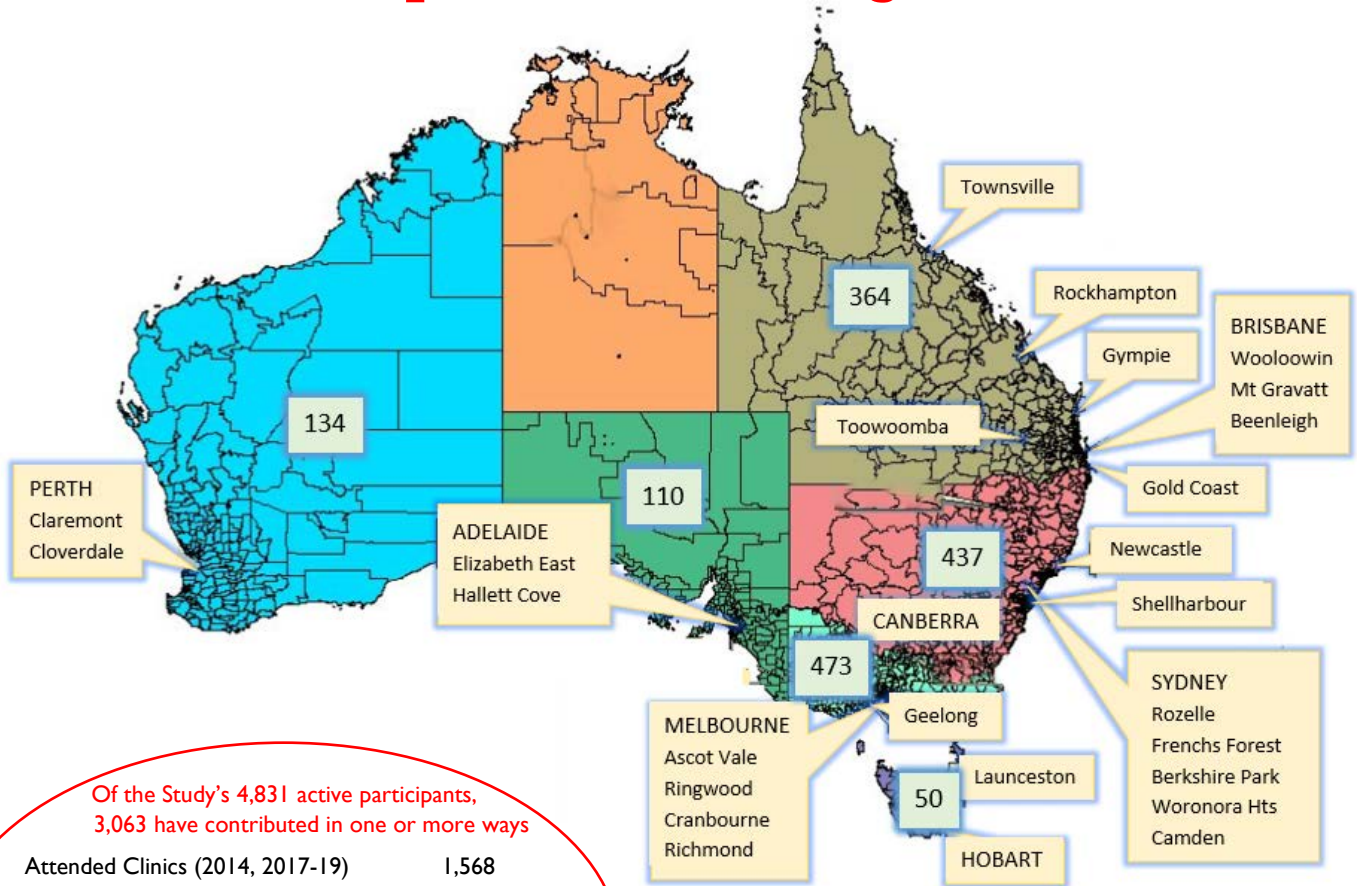
valued. Many participants express excitement and enthusiasm about the potential for the epidemiologic research findings that this will inform, both in the short and long-term. So, thank you for your continued enthusiasm and commitment to the study which has, and will, continue to contribute to impressive progress in cardiovascular research.

Jasmine Prichard RN, MPH
Fieldwork Manager



The Cabassi brothers going through their paces in Townsville

CDAH3 Road trip - where did we go?



Of the Study's 4,831 active participants, 3,063 have contributed in one or more ways

Attended Clinics (2014, 2017-19)	1,568
Completed health and lifestyle, dietary, physical activity questionnaires	2,050
Completed Heart Health surveys	3,039
Completed a pedometer 7-day diary	1,345

The amazing lengths some participants go to, to attend clinics:



1,200 km from Sun Valley to Mt Gravatt QLD
722 km from Mildura VIC to Elizabeth SA



1,160 km from Adelaide to Sydney

More fun facts

We are delighted to report that we had at least one person from each of the original 109 schools attending clinics for this third follow-up. That is wonderful to see that each school was represented, and participants are continuing their involvement well into the 30+ year follow-up.

Which schools had the *most participants* attending clinics in each state/territory?

QLD	Moggill State School	33
VIC	Waverley Meadows Primary	30
WA	South Perth Primary School	29
TAS	Norwood Primary School	27
ACT	Chapman Primary School	26
NSW	Tyndale Christian School	24
SA	Madison Park Primary School	18
	Marryatville High School	18
NT	Millner Primary School	12

Which schools had the *highest proportion** attending clinics in each state/territory?

VIC	Clifton Hill Primary School	50%
QLD	Marymount College	50%
WA	Newman College	47%
SA	Wilderness School	46%
	Marryatville High School	46%
TAS	Cosgrove High School	44%
ACT	Chapman Primary School	41%
NSW	The Forest High School	40%
NT	Millner Primary School	27%

* proportion by school = students attending clinics divided by total number of students for that school currently enrolled in CDAH

Chief Investigator's message



I would also like to thank everyone for their participation in recent phases of follow-up for CDAH, whether through completion of a survey or attending a clinic. CDAH really is unique in Australia and its value grows with each successive wave of follow-up. While there are similar studies in the USA and Finland, with which we collaborate in the i3C Consortium, none of them have the measurements of physical fitness that CDAH offers, nor do they have the sophisticated ultrasound measures of heart and blood vessel health that we obtained in the recent CDAH3 clinics. We are especially looking forward to seeing how fitness patterns from childhood to midlife affect our cardiovascular and metabolic health and to sharing those findings with you. My thanks too to the CDAH team – an amazing effort over the last few years!

Professor Alison Venn, Director, Menzies Institute for Medical Research

Highlights from recent research findings

The main aim of the CDAH study is to better understand how factors in childhood affect the risk of developing heart disease and diabetes later in life but the rich and varied data that you have provided over the years make it possible for the research team to address a broad range of related questions. Here are just some examples from recent publications– we hope you find them interesting.

[Relation of Blood Pressure in Childhood to Self-Reported Hypertension in Adulthood.](#)

This study used data from CDAH and five other studies in the i3C Consortium to investigate the relationship between blood pressure in childhood and adolescence and hypertension in midlife. It found that adults with hypertension were more likely to have had high blood pressure in childhood and adolescence and to have a higher body mass index. It highlights the importance of lifestyle modification early in life to help prevent future hypertensive disease.

[Childhood health motivation and adult cardiometabolic health in the Childhood Determinants of Adult Health \(CDAH\) study.](#)

In 1985, CDAH participants aged 9 years and older completed questionnaires. Participants were asked, among many questions, to rate the importance of a range of health-related behaviours and knowledge such as knowing about your body, having a good diet, not smoking and not being fat. Responses to these questions were found to be associated with behaviours and health status in adulthood including smoking, body mass index, blood vessel and metabolic health. The findings point to the importance of health motivation in childhood and adolescence.

["I love having a healthy lifestyle" - a qualitative study investigating body mass index trajectories from childhood to mid-adulthood](#)

Children with overweight or obesity are at greatly increased risk of experiencing obesity in adulthood but for reasons generally unknown some attain a healthier adult weight. The qualitative study undertaken recently with a subgroup of the CDAH cohort

investigated individual, social and environmental factors that might help explain diverging body mass index (BMI) trajectories.

[Longitudinal associations between TV viewing and BMI not explained by the 'mindless eating' or 'physical activity displacement' hypotheses among adults.](#)

Everyone knows that spending lots of time watching TV can lead to weight gain, right? But why is this? Is it because TV viewing takes the place of more active pursuits? Or is it because we tend to eat more, or eat more unhealthy foods, while watching TV? We recently tried to answer these questions in a paper published in the BMC Public Health journal. Using data from the CDAH-1 and CDAH-2 studies, lead investigator Dr Verity Cleland said that 'neither increases in food and drinks consumed during TV viewing time, nor changes in leisure time physical activity, explained the relationship between TV viewing and body mass index.' This unexpected finding suggests that while TV viewing and weight gain are related, they are not readily explained by the 'physical activity displacement' or 'mindless eating' hypotheses, and that there are other things that may explain this relationship, such as dietary behaviours during non-TV viewing time.

[The great leap backward: changes in the jumping performance of Australian children aged 11–12-years between 1985 and 2015](#)

This study quantified the 30-year changes in jumping performance of Australian children aged 11-12-years using data from nearly 2,000 participants in CDAH collected in 1985 and nearly 1,800 participants in the Growing Up in Australia's Child Health CheckPoint study in 2015. Both cohorts measured

jumping performance (standing long jump distance), anthropometric and demographic characteristics. Between 1985 and 2015, jumping performance declined by an average of 16.4 cm or 11.2% with body mass changes accounting for only part of the decline.

[Childhood cardiorespiratory fitness, muscular fitness and adult measures of glucose homeostasis.](#)

Cardiorespiratory fitness includes the ability to run long distances and muscular fitness includes grip strength, jumping performance and the ability to perform push-ups. In this study, higher levels of cardiorespiratory fitness and muscular fitness in childhood were associated with measures indicating lower risk of type 2 diabetes in adulthood. These findings highlight the importance of encouraging both cardiorespiratory fitness and muscular fitness in childhood and that benefits may be long lasting.

[DHA mediates the protective effect of fish consumption on new episodes of depression among women.](#)

We have previously shown that women in the CDAH study who ate fish at least two times per week had a lower risk of having depression during the next 5 years. This study found an omega-3 fatty acid (Docosahexaenoic acid, DHA) explained about 25% of the lower risk but a lot was unexplained. This suggests components in fish other than omega-3 fatty acids might be beneficial for women's mental health. To get the best benefits for mental health, eating fish may be better than taking supplements.

If you are unable to access these articles via the above links, call us toll-free on 1800 634 124 to have a copy sent to you.

Meet our students and early career researchers



Ye He, PhD Student

You may have met Ye at our recent clinics, when she was taking retinal photographs. Ye's research aims to investigate the association between childhood weight status and women's reproductive health. She has found that obesity before the age of 12 years is associated with impaired fertility in later life. She also found that childhood abdominal obesity is an indicator of future risk of pregnancy hypertension, menstrual irregularity and polycystic ovarian syndrome. Ye's latest study will look at menopause symptoms in the third CDAH follow-up.



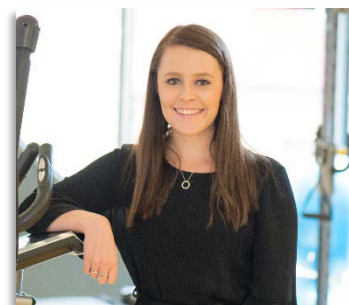
Research Fellow Jing Tian

Jing Tian has been working with CDAH since 2013. As part of her PhD, she looked at the predictors of changes in smoking status among CDAH participants. In this recent paper <https://www.ncbi.nlm.nih.gov/pubmed/30736767> she found that socioeconomic status in childhood, young- and mid-adulthood are all important in predicting mid-adulthood smoking status. Exposure to parental smoking and intention to smoke in childhood seem to partly explain the associations.



Myles Moore, PhD Student

Abnormal blood pressure detected during light exercise can reveal risk related to high blood pressure otherwise missed by traditional modes of assessment at rest. We currently don't have a good understanding as to what early life risk factors predict how blood pressure responds to exercise in later life. Therefore, we aim to understand which childhood characteristics (using the data collected back in 1985) can predict blood pressure responses to light exercise measured during the cycling test completed at the CDAH3 clinics. This research will ultimately provide important information in relation to the earlier identification of high blood pressure.



Brooklyn Fraser, PhD Student

Brooklyn put SA and WA clinic participants through their paces testing their strength. Brooklyn is a PhD student using CDAH data to better understand whether childhood muscular fitness is a risk factor for future health outcomes. In CDAH clinics, muscular fitness has been assessed via the standing long jump test and different measures of muscular strength, including grip strength. Brooklyn has examined how the muscular fitness levels of Australian children have changed over time (children and adolescents in 1985 were fitter!) Further, she is examining whether low childhood muscular fitness is associated with an increased risk of type 2 diabetes in adulthood.



Johanna Wilson, PhD Student

Johanna enjoyed meeting WA participants when she worked at our Perth clinics last year. Johanna's PhD research looks at the relationship between diet and depression, using data from the dietary surveys in youth and adulthood and the CDAH mental health interviews. Individual studies of her project include validating a dietary guidelines index to measure diet quality, looking at whether there are any associations between diet quality and depression, and examining time-of-day eating patterns and depression.



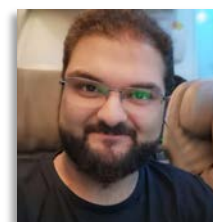
Conghui Liu, PhD Student

Conghui joined the CDAH team in February and is investigating the life course factors that predict kidney function in midlife using blood and urine test results in CDAH3. Her interest is in the factors that predict early stages of chronic kidney disease (CKD).



Angie Miles, PhD Student

Angie started her PhD earlier this year, working with the sleep data collected as part of CDAH and investigating relationships of sleep restriction and sleep quality with adiposity and metabolic syndrome. She is already loving the process and is looking forward to getting to know the CDAH team!



Mohammad Shah, PhD Student

Mohammad is in the first year of his PhD, and will be investigating factors in early childhood and early adulthood that contribute to cardiovascular health for participants at mid-adulthood in CDAH-3, as measured by the intima-media thickness (IMT) of their carotid arteries. Mohammad will also examine sex differences in the association between the early factors and carotid IMT for participants in CDAH-3.

International Childhood Cardiovascular Cohort (i3C) Cardiovascular (CV) Outcomes Study

The i3C Consortium pools data from seven longitudinal studies in the United States, Finland and Australia. The objective of the CV Outcomes Study is to determine whether there are linkages between risk factors for heart disease measured during childhood and adolescence (overweight/obesity, high blood pressure, high cholesterol, smoking) with

the development of cardiovascular disease in middle-age.

The CV Outcomes Study has been underway conducting Heart Health surveys since mid-2015 and is due to finish data collection by November 2019.

To date all i3C studies have obtained information on cardiovascular health from nearly 20,000 participants.

Thank you to the 3,039 CDAH participants who have contributed to this important international research by telling us about your cardiovascular health.

If you haven't done a Heart Health survey yet, give us a call on (freecall) 1800 634 124, email cdah@menzies.utas.edu.au or text us on 0418 491 988 and we'll send you a link. The survey

is short and takes less than 5-minutes to complete online.

For more information on i3C research and cohorts: <http://i3cconsortium.org/index.html>

For i3C publications, please visit: <http://i3cconsortium.org/publications.html>

Goodbye to the CDAH-3 data collection team

Now that the work in the field is complete and has been replaced by the industrious hum of researchers analysing the data, it was time to bid a fond farewell to the CDAH data collection team. We bade a sad goodbye to Janette (who many would recognise as the voice of CDAH since 2014), Hilary and Deirdre, our wonderful evening telephone callers, and Emerson who did a sterling job organising our clinic sites and logistics. Jasmine, our Fieldwork Manager, has moved on to a new project within Menzies.

Karen continues to man the office at CDAH HQ and will work wrapping up data collection for CDAH and i3C.



CDAH Team (L to R) Hilary Waugh, Deirdre Paramor, Karen Patterson, Janette Gyselman, Emerson Easley, Jasmine Prichard (Fieldwork Mgr)

Frequently Asked Questions

I found an email with a survey link. Is it too late to complete questionnaires?

While the clinics have finished, we are still keen to collect your valuable information through our surveys. These will remain open online until the end of 2019. The link in your email is unique to you, and this will take you to a page listing your surveys based on what you have done in the recent past.

If you have been sent paper surveys - yes, we'd still love to receive your responses. Contact us if you need another reply-paid envelope to return these (freecall) 1800 634 124, or txt 0418 491 988.

I can't finish my online survey as it's asking me for a code. I don't have it - what do I do?

Thanks for starting! Our online survey platform (REDCap) creates a 'return code' automatically if you choose to come back to your survey at a later time. We're happy to email that to you - just email cdah@menzies.utas.edu.au, or text us on 0418 491 988. We'll send you your survey link + return code so you can continue where you left off.

My pedometer reading is lower than my Fitbit. Can I record my Fitbit steps instead?

So that we can compare the physical activity data from the current follow-up with the data we collected previously, we need to ensure that we're measuring steps the same way as we did then (apples with apples). Even if your total pedometer steps are reading lower than your Fitbit, your pedometer steps are more reliable to us as they provide a sound basis for comparison with your previous data.

I found a pedometer, what do I do?

Please send this back to us at Menzies if you still have the reply-paid postpak. If you don't have the postpak, just call 1800 634 124 or txt 'postpak' to 0418 491 988 and we'll send one out to you. Even if it's broken or has stopped working, please send it back (often they need a new battery).

If you still have your pedometer diary form and are still interested in recording your steps over 7 days, this would also be very helpful for our research. Again, contact us you to receive your pedometer diary and postpak.

How do I find out what research is coming from the study?

The best way to see some of the scientific publications produced by the study is via our Facebook page. It's a public page so you don't even have to be a Facebook member to take a look. Click here: <https://www.facebook.com/cdahstudy/> or just type in 'childhood determinants' and it will pop up.

To see the research publications from the International Childhood Cardiovascular Cohort (i3C) Consortium, please visit <http://i3cconsortium.org/publications.html>



Have you moved? Changed your name?

We'd love to hear from you so we can keep up to date with your contact details.

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