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What is Children of the 90s?

The Children of the 90s study is a longitudinal birth cohort study which follows three generations of Bristol families. With its uniquely detailed data, scientists around the world can explore how genes and environment influence the health and wellbeing of children and their parents.

The study, also known as the Avon Longitudinal Study of Parents and Children (ALSPAC for short), began by inviting all the pregnant women living in and around Bristol whose babies were due between April 1991-December 1992 to enrol, many via a conversation with their midwife. Of the estimated 20,000 eligible pregnancies, around 80% of the women enrolled in the study, resulting in over 14,500 babies – known as the 'Children of the 90s'.

The health and lifestyle of the original babies and their parents was - and continues to be - followed in detail via face-to-face clinics and questionnaires, providing ground-breaking data and biological samples for research. Official administrative records such as their medical, work and education records (where consented) provide additional detailed data on their ongoing health and wellbeing.

With so much information collected throughout their lives, the Children of the 90s are probably the most intensively studied cohort of children ever recruited for research. Many participants have started families of their own, and over 2,000 Children of the Children of the 90s now take part in the study, alongside their parents and grandparents.

In the three decades since it began, Children of the 90s has become a world-renowned resource of biological, environmental and lifestyle data which has led to more than 3,000 peer-reviewed research papers.

How healthy young adults help us to understand causes of disease

Since they were born, the Children of the 90s study children have visited our clinic in Bristol regularly for repeated health measurements. For instance, between the ages of 7-17 years, there were 9 clinical assessments.

In 2021, the Children of the 90s launched its biggest ever clinic, named @30 to coincide with the 30th birthday of our original babies. No longer children but now adults, they represent a typically understudied group. Scientists hope that by studying this age group they can help to unlock the causes of future ill health including respiratory, cardiometabolic and musculoskeletal conditions.

The @30 clinic is the largest ever collection of health data and so far over 7,000 participants have attended for a 3-hour visit. This includes not just the original study children, but also their parents, children and also partners (where they have a child involved in the study).

The @30 clinic repeats a range of health measures which have been taken throughout the participants' lives. These include cardiovascular fitness, physical function, lung function, blood pressure, liver function, bone density and body composition measures using a Dual Energy X-ray Absorptiometry (DXA) scanner which assesses fat, bone and lean (muscle) mass.

At the clinic, biological samples are also collected including blood, saliva and urine. By storing and processing these samples, detailed genetic data is obtained, helping researchers to learn about the important role our genes have in making us more or less likely to develop disease.

In total, there are now approximately 1.5 million biological samples in our Bristol biobank from over 20,000 participants. Beginning with blood from the pregnant mums in early nineties, including over 8,000 placentas from the original pregnancies and over 9,000 milk teeth donated by the children. In 2018, the study was recognised as the UK Biobank of the Year by the UKCRC Tissue Directory and Coordination Centre.

Facts & Figures

Study participants:
Originally just under 15,000 pregnant women were recruited to take part and as their families have grown with children and for some, grandchildren, there are now over 34,000 enrolled participants. This breaks down as

- 13,950 original study mothers (average age 60 years) and 3,640 study fathers (average age 64 years)
- 14,820 Study children or Children of the 90s (average age is 31 years)
- 2,070 Children of the Children of the 90s (aged 0-16 years)

The study began and is still largely focused around the city of Bristol, as the majority of the original study children still list a Bristol address as their main point of contact. As well as inviting participants to take part in research projects and clinics, we post them a birthday card each year, and almost 10,000 will be sent in 2023.

Our data and samples:

- 1.5 million biological samples (including blood, urine, placenta, teeth, hair and nails)
- DNA samples (11,000 children, 11,500 mothers, 3,300 partners). Genetic data such as this can be used to help identify individuals who are at greater risk of disease with the aim of matching treatments and intervening to improve health outcomes for those at risk.
- 12,000 original study children have consented to allow access to their medical and education records
- >1,500 brain scans
- 40,000+ DXA scans taken at seven different ages in the children but also in their parents
- >3,000 heart echo scans
- 2,000 retinal scans i.e. images of the back of the eye
- 4,000 liver scans at several ages
- 7,000+ ear drum pictures
- More than 90,000 data variables are available for analysis (includes questionnaires, blood measures and clinic information)

Our health and social science research:

More than 3,000 papers have been published using Children of the 90s data. In 2022, 214 papers were published using our data. Over 1,000 researchers around the world use the data and samples and we receive around 20 new requests per month on average to access the study.

Most research papers published in the past five years cover public health, biological science and clinical medicine. Around 18 per cent cover psychology, psychiatry and neuroscience and 15 per cent cover education and social science.

Since August 2019, £12m has been awarded directly to Children of the 90s to undertake research, and more than £140m in grant income has been awarded to research institutions (in the UK and abroad) thanks to Children of the 90s related studies.

Developments in data collection

Linking to official records

We currently connect to routine health and education records to supplement the data our participants give us directly such as official birth, GP and hospital records, death certificates, cancer registrations, exam results and geographical data. Our newest study will evaluate the potential of store loyalty cards (e.g. Boots Advantage/Sainsburys Nectar) to help us unlock risk factors for certain health conditions or identify outbreaks of illness.

Technology

New techniques help us collect data during participants' daily routines at home, the workplace or out and about. For example, tiny wearable head cameras record parents interacting with their infants at home and wearable monitors continuously measure participants' glucose levels during pregnancy or their activity levels and sleep behaviour.

Our COVID-19 research

At the height of the pandemic, our study helped to understand the prevalence of the disease, including asymptomatic cases, immunity and its effects on physical and mental health.

Questionnaires were sent to participants throughout the pandemic asking them about their COVID-19 experience. Responses informed the Government's SAGE committee and Public Health England via the Health Data Research UK reports. We showed that the proportion of young people experiencing anxiety at the beginning of the pandemic almost doubled, at 24 per cent compared with a pre-pandemic level of 13 per cent. We worked closely with other studies across the country to better understand Long Covid and its long-term impact on health.

The future

We hope to continue building on the 30 years of data we have already collected and are busy applying to the Medical Research Council to secure funding for the next five years.

Our focus will be on capturing the major life events of our original Children of the 90s as they have children of their own, start to care for their own parents and develop their careers. We will also follow our participants' health and lifestyle through their thirties, an age that is typically 'understudied' and which is critical to understand pre-cursors for later life health, including respiratory, cardiometabolic and musculoskeletal conditions.