

When Science Finds a Way

Season 1, Episode 4

Can a research study change a city?

John Wright 00:05

Our strapline for Born in Bradford is - can a research study change a city? And that's really, fundamentally what we're trying to do. We're trying to improve the health of our families, and improve the healthiness of the city that we live in. And key to Born in Bradford, is this idea that we really make a difference.

Alisha Wainwright 00:28

Welcome to When Science Finds a Way, a podcast about the science changing the world. I'm Alisha Wainwright, and on this series I'm meeting with scientists and researchers who are actually making a difference, as well as the people who have inspired and contributed to their work. When you think about scientific research, you most likely imagine something with a clear start and end date, a small focused group of participants, and a specific thing they're trying to study. But...what if you just decided to study tens of thousands of people, with no end date, just to see what you could discover?

Intrigued? In this episode, we're going to hear about just this kind of project. It's research that could happen in any city in the world. But it happened in this city. And it's called Born in Bradford.

So, Bradford. It's a city in the north of England. About half a million people live there, so it's one of the biggest cities in the UK. And, starting in 2007, every pregnant woman in Bradford, who accessed some kind of public medical service, was asked a question – “do you and your families want to participate in a long-term research project”?

As it turns out, a lot of them said yes – the first intake for Born in Bradford was 12,400 families! And it's only gotten bigger since then. Around 30,000 people have now participated in some way. The researchers have followed them for decades. And with that amount of *data*, over that amount of *time*, you can draw some powerful conclusions – which are relevant in Bradford, *and* anywhere else.

Tahira (Born in Bradford) 02:04

We have a research centre that is doing something really positive - look at the clean air zone. We're looking at, you know, the study of green access to green spaces - where can we have more and more access to that? And that's not just because people have just decided that, but, a lot of work has gone into that, a lot of research and - and we can implement that, we can make those changes now.

Alisha Wainwright 02:26

To get the Born in Bradford story, I spoke to the person who founded it– Professor John Wright. Funnily enough, he wasn't born in Bradford himself. But he's made it his adopted home.

There's this idea of researchers being purely observational – you know, a fly on the wall perspective. John told me that this is not the Born in Bradford approach. This research is ingrained in the community, in the lives of its participants.

When you listen to John, and some of the people who've participated in the study for years – you'll get a real sense of their civic pride. And also a vision of what this kind of research is capable of.

So John, from a local's perspective – what's Bradford like?

John Wright 03:16

So Bradford's a - it had its heyday in the mid 19th century, was the wool capital of the world. And it's full of this honey coloured Yorkshire stone and Victorian splendour, surrounded by the beauty of the Moors, where the Bronte sisters wrote their books. And in the last sort of 50 years or so, it's fallen on harder times. And that's led to, you know, high levels of deprivation. Because of its industrial nature, it relied on migrant labour for many, many years, whether those were Eastern European, or German Jews, or Irish, or Poles, or - more recently - Pakistanis, who came over in search for work in the textile mills. And it's the Pakistani community in particular, which has lasted and grown in the city, and now comprises of about 30% of the population.

Alisha Wainwright 04:10

And from a public health perspective, what is Bradford like?

John Wright 04:13

So we have, you know, deprivation, we have poor white communities and poor South Asian communities, poor Eastern European communities. And what you notice when you start working in Bradford is the high levels of ill health. So we have some of the highest rates of diabetes in the country, some of the highest rates of cardiovascular disease, high levels of congenital anomalies, we have the highest infant mortality rates in the country. And, you know, these are, these are shameful statistics really, but we also have the lowest healthy life expectancy in Bradford City. So it's, it's high levels of ill health.

Alisha Wainwright 04:45

So that's why you wanted to do the study there?

John Wright 04:48

One of the things we woke up to was how little health and medical research there was going on the city. So it's the fifth biggest metropolitan district in the country, a population of about 600,000 people. And yet we had almost no medical health research going on in the city despite these high levels of ill health. So we had to, we had to improvise. And that led us to think about what our assets were in the city. And our assets really were our people. And, you know, this wonderfully diverse, fantastically altruistic population in the city, and to see whether we could tap in and get them involved. Do something that was more grassroots than, sort of, scientists sitting around looking at test tubes or whatever they do in biomedical research.

Alisha 05:34

Okay, let's meet some of those people. Here's Rebecca, Tahira, and Lewis, who have participated in Born in Bradford in different ways over the years. They told us how they got involved.

Rebecca (Born in Bradford) 05:46

I remember quite clearly getting involved in Born in Bradford when I was pregnant with my first child, in 2007. And I think it was at one of my hospital appointments, a scan or something. And there was a table there with Born in Bradford ladies, and they were inviting us to sign up really - to be part of the project. And I'd heard about it before. And it was something sort of new. And obviously pregnancy, to me, was a new thing. And I felt - oh, yeah, it's interesting. It's probably important and exciting. So I signed up. And that was 15 years ago.

Tahira (Born in Bradford) 06:19

When I was at university, and I was expecting my daughter - because I think they were doing some research at the time, obviously, monitoring all the births and various things that they were looking at. And then a few years later, we, I received an email from one of the researchers, and it was about getting some of the children who were the Born in Bradford cohort for that particular year, to become ambassadors. And so I got my little girl and said, right, you're going to become an ambassador, it will look really good on your CV when you're older. Then, we got involved in some gathering of data, and things, and it's just continued since then, yeah.

Lewis (Born in Bradford) 07:01

Perhaps a strange thing for me to say, in one sense, as I take part in some research is that I'm not a great believer in research, in terms of, I think there's an awful lot of research that is actually the agenda is already set - the outcome, you know, like the experiment is set up wrong, and it's kind of quite transparent. And you can kind of go like, you clearly set all the wrong questions. So part of the driving force for me is that element of kind of like, research can be done well, and actually, it can make a real impact, in that I know my local community quite well. And I think my local community is an excellent pick because it's just, it's so mixed, kind of heritage, and ethnicity, and makeup and lots of different worldviews going on as well. And so I think, actually, you do something in Bradford and it has the opportunity to speak for a much wider audience than just Bradford actually.

Alisha Wainwright 08:02

Bit of a mixed bag of initial opinions.

John Wright 08:05

Yeah, no, I'm with the last, the last one. I think most research does have its conclusions already written before it's even set up. That's one thing we wanted to try and avoid. So yeah, let's get them all involved.

Alisha Wainwright 08:17

I also get a sense of a real pride for Bradford, too.

John Wright 08:21

One of the nice things about Born in Bradford is, I think, and this is an unexpected outcome, is how it's nurtured that pride. I think one of the ward clerks in the hospital was saying that she runs a Girl Guides group and about half the children, half the girls in the group are Born in Bradford, because half the group and - every school, half the children would be Born in Bradford.

Alisha Wainwright 08:42

Right

John Wright 08:43

And she said that they're so proud of being in the study, and they don't really understand what it's about, but they just love feeling as though they're contributing. And that's something we really want to tap into. The children are now teenagers, all of them. So we really want to tap into that vein of inspiring them in science and aspiration.

Alisha Wainwright 09:05

So that first cohort that began in 2007, was all families that were expecting a child. But since then, all sorts of people from Bradford have taken part in the study. So walk me through how the scope of the study has expanded since that first cohort.

John Wright 09:22

Yeah, so I'll tell you a little bit about the, the - our families, to start with. So they're very representative of families in Bradford's, about 70% of our families are from the poorest quintile, that's the poorest 20% of the population in England and Wales, and about 50% are from ethnic minority groups. So, these are groups of people that traditionally get ignored in research. And while we're getting better at capturing these underserved communities, it is, it was really important for us to get to, to hear these seldom heard voices. And we've been tracking the children through the school years, and tracking the mums and dads through, through what happens with their lives. That by about 2015 or so would produce lots of new science, new, new evidence about associations of exposures in ill health. There was a common feature in all of these small stones that we were adding to the mountain of global knowledge. And that was how heavily deprivation shaped everything, really.

Alisha Wainwright 10:32

What do you mean, deprivation?

John Wright 10:34

How poverty, basically, was at the roots of ill health, mental health, physical health and educational attainment. So there was a bit of frustration about, we're just describing the problem, rather than doing anything about it. So, our second cohort led by my colleague, Josie Dixon, was the world's first experimental birth cohort - grandly claimed, and no one has sued me yet for saying that, Alisha, so I think we're okay. And we set that up in 2016. It was recruiting 5000 families - mums, dads and newborns, during pregnancy again, because we had lots of experience with this, but in some of the poorest wards in Bradford. So we focused on a smaller area this time, and this time, we were able to test out 21 different interventions in early life. Some of them around parenting, some of them about physical activity and diet, some of them around language development and social skills. But really with

a with a view that we know that early life's importance, what can we do differently to help improve the trajectories of these children? So we set up this - Born in Bradford's Better Start, and it's been following children since then. And we now evaluate multiple interventions to see what happens to these children and track them over the course of their lives, hopefully.

Alisha 11:55

You've talked about 'doing things differently', you've talked about 'interventions' -- it's clear that Born in Bradford is an active kind of study. So can you share some examples of how your research has had an impact in the community?

John Wright 12:07

Our strapline for Born in Bradford is - can a research study change a city? And that's really, fundamentally what we're trying to do. We're trying to improve the health of our families, and improve the healthiness of the city that we live in. And key to Born in Bradford, is this idea that we really make a difference. And right from the start, because it's embedded in the NHS, we're able to shape the development of clinical guidelines. We found low levels of vitamin uptake in the pregnant mothers, so we redesigned services and showed a marked increase of vitamin uptakes. We did all the screening for gestational diabetes and found and detected lots more cases. I think that moved on then, as the children moved into schools, to working with schools and you know, some really interesting ideas around - we found this double disadvantage of premature babies and being born in the summer. So summer birthdays tend to do less well than autumn birthdays at school. So we worked with schools to change school entry policy, so that they could delay to the next year. That's a nice little one. Glasses for Classes, we found that a lot of children were having, had visual acuity problems, weren't being picked up. Those who were, weren't bringing their glasses in, you know, for various reasons. So we introduced Glasses in Classes, as again, like Born in Bradford, it says it on the tin. And that improved educational attainment, really nice simple study. And then on a sort of wider city basis, we've done lots of stuff. The environment - that was something which we hadn't even really thought about. So we've grown a large programme of environmental research, whether that's green space, or air pollution, or connectivity, or active travel, the stuff that actually makes difference to people. And we showed, we did some of the groundbreaking stuff on air pollution and growth retardation, and childhood asthma. And that led to the introduction last year of the one of the country's most ambitious clean air zones, to do something about it. So that's a really nice example of where our evidence has led to policy change across the city. I'm more interested in how research can change what we do - use it as a vehicle for change, rather than research as, as in itself, as a purist. And the feedback comes all the time. So, you know, when I get my hair cut, you know, my barber has two kids in Born in Bradford. When I go to the shops, I know that, you know, the family's got kids in Born in Bradford. So it's, it's sort of in the tapestry of life, in what, in the city, which is a good analogy for a textile city.

Alisha Wainwright 14:47

I don't know that I've encountered someone who is living amongst where they're doing their research. And I think that that gives you an incredible advantage to having just continued insight, because it's the barber shop, it's the grocery store, it's picking up your children from school, if you have, and so it's kind of beautiful to see almost your own, this is your own community being impacted by your research.

Alisha Wainwright 15:26

So we've heard that when the team designed Born in Bradford they were explicitly trying to make a difference, trying to make an impact. And it sounds like a lot of those impacts have been made. But any research study needs participants, and Born in Bradford had a lot - over 12,000 families in that first cohort. On a practical level how do you get that kind of buy-in from residents?

John Wright 15:50

I think there's different levels of that. One is about awareness raising beforehand and making sure that people knew about it, and were excited about this project that was going to build pride in the city. Secondly, was the actual recruitment and having, having, having researchers who were very comfortable and could build trust in the mothers and the fathers. But also making sure that they were bilingual, because of the numbers of languages spoken in the city, and levels of literacy and things like that. It's really important to have a culturally adapted approach to your recruitment. And then it's a slow burner. So over time, we've been able to show the impact of the studies and feed that back to our participants. The engagement is a work in motion for us. And I think our move towards engagement is very much around whole city, whole community engagement. And, and establishing a sustainable reciprocal arrangement. So we're not just taking information or taking data from mothers, fathers children, but actually making sure we give something back - giving our participants agency in the study so that they're not passive participants. So that, again, is work in motion, but it's where we want to be in the future, of really changing the dynamics of the relationships between participants and researchers.

Alisha Wainwright 17:18

OK, let's hear more from our participants, Rebecca, Tahira and Lewis about exactly how their families have taken part in the research, and how the study has actively kept them engaged.

Tahira (Born in Bradford) 17:28

I think the one that I can remember is the one, we did something in lockdown, and it was about what the children were doing - activities, lockdown activities. It's just there was, there's so many, and even around food, what children were having, things like that, there's been so many different surveys and they're quite easily, you know, accessible. Even the language used was very accessible. And the research was always there, on hand, to support you, complete the documents. And you know, it wasn't just - here, can you do this for me? People walked you through them.

Lewis (Born in Bradford) 18:03

I would say Bradford residents are actually quite engaged in like, they want to be in a conversation about community. I think there's quite a big kind of wish. And more so, more so than other places I've been in - virtually any other place that I've been in the country, actually. There's this kind of like, you want to have community, we want to have a well community, we are proud to be from Bradford.

Rebecca (Born in Bradford) 18:29

I think people like to be involved. They like to feel supported and be involved in a bigger thing, and give their opinion, it gives them a chance to have a voice, ask questions. And for me, that's one of the most important things - giving that, giving people and families that choice and the information. And I think like

anything within the community, it's bringing people out of possible social isolation, bringing them together, giving them that peer support, which is really important. So, around the time when you're having children and you're looking for new connections with other families and other mums. If you're invited to an event, you feel part of something. And you know, that's really good for mums' mental health as well.

Lewis (Born in Bradford) 19:14

I think research that feels like it was born from the community, into the community creates community. Activity happening in a community, or positive activity in a community brings community closer together, improves community strength, but it has to be valued. And I think that's one of the things that Born in Bradford has done well.

Alisha Wainwright 19:38

Community community community, I mean, I barely, I barely know my neighbours in Los Angeles. But weirdly, I know all their dogs. I think I could benefit from, and my community could benefit from something like Born in Bradford.

John Wright 19:54

It's, it's heartwarming, actually. And I think it reflects the transactional nature of the relationship of, you know, this isn't something we're doing to people, we're helping to organise communities and raise awareness, and come up with better ways of how we can promote health and embed that within clinical structures, clinical systems and local government systems.

Alisha Wainwright 20:22

I wanna ask - as a participant what are the ways you can get involved? I mean, what are they actually *doing*?

John Wright 20:28

Yeah, it's a lot down to our fantastic community research team who have been quite remarkable in how they - and they came out in some of those interviews of, you know, sitting down with mums and dads, being able to translate, being able to answer questions. So there's a very human dimension to this, and what, some of it is just filling in surveys and questionnaires which can be a bit dull. And some of it's taking blood, you know, we can look at different biomarkers or do gene sequencing. And some of it's about, you know, we've done studies around measuring physical activity using active graphs, which you have to wear for a week. Some of it's measuring air pollution on the way to school. So you have to carry these backpacks, which are measuring particulate matter and nitrous oxide. So there's many, many different ways that you can be involved in the different sub-studies.

Alisha Wainwright 21:24

Just imagining little five-year-olds walking around with giant bags of equipment.

John Wright 21:30

That was a big design problem, actually. I mean, the technology, since we've done it, has improved, but they were, they were sort of falling over with these big backpacks on.

Alisha Wainwright 21:39

Kids are already falling over with their big backpacks.

John Wright 21:44

That's true!

Alisha Wainwright 21:51

I'd like to talk about Age of Wonder, which is the next phase of the research, focusing on mental health in adolescents. Age of Wonder is also just a really cool name, But what's also cool about it is that you're now researching with teenagers who weren't even born yet when you started recruiting for Born in Bradford. What is the aim for this stage of the research?

John Wright 22:31

Yeah, so Age of Wonder, is, you know, this tumultuous period of change - metamorphoses from being a child to an adult. And we have this in front of us in the Born in Bradford children, as they transform, and we can follow them over the next six years. So to follow them up through this, this remarkable period where, you know, big psychological, biological, social change in these few years, and where things like habits of risk taking, and alcohol, and smoking, and drugs start getting set, and eating behaviours start getting set - physical activity. So all these things, it's a really, you know, really crucial window. So, so we're just starting this year on following these young people up, but it is very much about putting them in the driving seat. You know, it's such a different generation. I know this is a cliché, but the technology that they're involved in is - even young researchers in their twenties are already left behind.

Alisha Wainwright 23:19

Well, we know your findings have impacted Bradford's community. But let's hear how taking part in the research has impacted the participants personally.

Tahira (Born in Bradford) 23:29

When you do become a participant, when you are working with a research organisation, it does, of course, it does kind of educate you to live a healthier lifestyle, if that's the form of, you know, research that you're involved in. It certainly did educate me in how to involve myself in community activities, and also learn a little bit more about research, and encourage me to continue trying to dabble into research myself.

Lewis (Born in Bradford) 23:58

It's a real encouragement to me to be in a place where this is something that is being put out there and being promoted. And I do think it gives a certain element of - this is the direction we're going as a community. And so there's a kind of a hopefulness that it brings.

Rebecca (Born in Bradford) 24:15

for my children, it's like, really, really positive thing in their lives and thinking about it, it's always been there. So, for me, it's, you know, 15 years, but they've always grown up with Born in Bradford, and it's

changed, and now they're doing projects on their own through school. And it'll be interesting if the continue into adulthood and, you know, they'll always be able to say, I was part of Born in Bradford.

John Wright 24:38

What a lovely testimony.

Alisha Wainwright 24:41

I love initially how a lot of the remarks were about the implementations, you know, the research is almost the vehicle to seeing the change that would like to be seen in the community. So, and it doesn't even seem to the participants like it's a necessary evil, it's actually something to be enjoyed. Which is really remarkable, because sometimes I - in learning about how clinicians have put together studies, it's kind of hard sometimes to get participants to enjoy participating. But that's all I hear. I just want to ask, should every city be doing something like Born in Bradford?

John Wright 25:17

Yes, we do get quite a lot of requests from other cities as to how to do it. Do we need lots of Born in Bradfords? Well, probably from a scientific and research basis, no, because you just need one really at any one time, wherever that is, whether it's national or local. Given that, you know, times change and you want to follow up different cohorts. But what it does as a vehicle for change is what people are really interested in. So we have set up - this is another offshoot from our family of Born in Bradford cohorts - is something called Born and Bred In. And this is a very simple and efficient birth cohorts method where you embed the recruitment into electronic patient record. And you train all the midwives, midwives ask everybody whether they want to be part of this Born and Bred in Leeds, or Born and Bred in Nottingham, or Born and Bred in East London -

Alisha Wainwright 26:11

Or born and bred in Los Angeles?

John Wright 26:13

Or born and bred in Los Angeles, baby LA, that's the one that I think, I think I might be interested in doing that one, Alisha, so -

Alisha Wainwright 26:20

Yeah, you'd travel for that one.

John Wright 26:24

So we've done this in about five centres at the moment, and have quite a lot of interest elsewhere. And the trick now is to turn these, these cohorts, these local cohorts, city cohorts into learning health systems, so that the information that comes out of it leads to change in clinical services, or across, across the city. So we're excited about that. But it's quite a big, ambitious agenda.

Alisha Wainwright 26:47

I've heard Born in Bradford called a "discovery research project" in that, it's open-ended, ongoing, you're just researching to see what you can discover. If someone listening is thinking about getting involved this sort of research, what advice would you have for them?

John Wright 27:05

I think, I think the ingredients are that community engagement, and getting that right from the start, and tapping into the networks that exist in, in every place. I think that every place has a pride of place, and tapping into that as well - everybody, everybody relates to where they live, and has links there. And there's something about tapping into that thing. I think having then, that your colleagues, practitioners, clinicians, teachers, health visitors, policymakers involved in the importance of this is another key part of that. So, so there's a bit about getting a movement behind what you're doing to, to do this. In terms of the patients, what you find is that new science, new evidence bubbles up right from the start. All - as soon as you start, as soon as you get going, you'll find nuggets of evidence and, and wisdom, and science, all through the journey of the birth cohort. And it goes off in different and unexpected directions.

Alisha Wainwright 28:16

So what I'm hearing, kind of the two main bits of advice are, a) to find the heartbeat of the community and tap into that, route yourself in that and prepare to be intertwined with everybody else. And then, two, stay consistent on the research. Keep yourself very aware of what's going on, because everything is constantly in motion, and you can always be learning.

John Wright 28:40

Yeah, and be open minded, really be open minded, and gather great people around you with lots of different disciplinary backgrounds.

Alisha Wainwright 28:50

John, I want to say thank you so much for speaking with us. That was incredibly illuminating. And I might have to see about having a midwife cohort startup something in California, Florida, everywhere in the US. Sounds great.

John Wright 29:05

Alisha you've been, you've been a joy to talk to, so thank you very much.

Alisha 29:11

Thanks for listening to this episode of When Science Finds a Way. And thanks to Dr. John Wright, and our contributors, Tahira Amin, Lewis Usher and Rebecca Grech.

Even though I've never been there, I feel like I know Bradford now. And I also feel like I have a better idea of how research can make a REAL difference in people's lives.

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