

The Bradford Inequalities Research Unit

A collaboration between RIC, Born in Bradford,
University of York & Queen Mary's University
London

A report describing the purpose of the BIRU and its key findings to date.

12/18/2020

Contents

What is the Bradford Inequalities Research Unit?	2
<i>The objectives of the BIRU:</i>	2
Definitions of Health Inequalities in RIC	3
Vision of the BIRU.....	3
A data driven approach	3
Integrating Research and Practice to enhance the evidence base of interventions to reduce health inequalities	3
Figure 1: The BiB Evaluation Framework	5
What has the BIRU discovered to date?.....	6
Evidence for RIC interventions	6
The RIC population.....	6
Health Inequalities in RIC	8
The impact of Covid-19	9
Acceptability Of Covid-19 Vaccination and Trust in Organisations.....	9
Effectiveness Evaluation of RIC programmes.....	10
The BIRU team:	10
<i>References</i>	11
<i>Reports:</i>	12

What is the Bradford Inequalities Research Unit?

The RIC programme has commissioned the Bradford Inequalities Research Unit (BIRU) to support the design, delivery and evaluation of the RIC Programme.

The BIRU is a collaboration between Born in Bradford (BiB), the University of York and Queen Mary's University London. The academic expertise, and access to big data in the BIRU brings a unique element to the RIC programme: providing an opportunity to deliver the most relevant, feasible and evidence informed interventions to reduce health inequalities in the Bradford central locality. In addition, the BIRU will support the evaluation of all interventions, and offer effectiveness (both impact and cost) evaluations of key RIC interventions, thereby enhancing the evidence base of interventions to reduce health inequalities, and placing a spotlight on good practice on Bradford.

The objectives of the BIRU:

Identify Needs & Issues to Address

- a) Co-develop an outcomes framework and programme logic model based on the needs of the RIC community and the strategic aims and priorities of RIC
- b) Adopt a data driven approach to inform the planning of RIC interventions, focussing on the drivers that underpin the health inequalities in the RIC community.

Identify Relevant Evidence Based Interventions

- a) Identify relevant evidence based interventions that are relevant and feasible to implement in RIC, through literature reviews and a Delphi consensus approach.
- b) Continuously look for new innovations and evidence in the literature.

Design, Implementation and Evaluation Support

- a) Provide research support to all projects to ensure they are designed to enable robust evaluation, including development of logic models and evaluation plans and the use of validated outcome measures.
- b) Provide workshops to all project leads to enhance knowledge, skills and confidence in evaluation of interventions
- c) Enhance routine data capture and data sharing to enable better informed evaluation (e.g. consistency and quality of ethnicity data)
- d) Evaluate the community readiness of key topics and communities to ensure optimal engagement of seldom heard communities in interventions.

Effectiveness Evaluations

- a) Apply innovative methods to model / evaluate the effectiveness of key interventions (in terms of both health outcomes and cost effectiveness).
- b) Enhance the evidence base of interventions to tackle health inequalities.

Definitions of Health Inequalities in RIC

Health inequalities are broadly defined as differences in the health and wellbeing of individuals based on their socioeconomic status, ethnicity, gender and age.

The area of RIC has some of the worst health inequalities in the whole of England, with high rates of infant mortality, early mortality and long-term conditions.

The area covered by RIC is highly ethnically diverse and deprived with all areas in the highest decile of deprivation in England (IMD). Within RIC we therefore have a particular focus on reducing inequalities based on socioeconomic status and ethnicity. The aim is to reduce inequalities compared to the rest of Bradford District and England, rather than within the RIC population.

Vision of the BIRU

A data driven approach

Bradford is in a unique position to be able to harness big data through two large-scale research programmes: Connected Bradford (<https://www.bradfordresearch.nhs.uk/findings-and-resources/>) that has pseudonymised data from >100,000 individuals linked across health, education and social care records; and Born in Bradford (www.borninbradford.nhs.uk), a series of birth cohorts with in-depth data on ~30,000 children and their parents.

Using these rich data sources, BIRU is able to take a data driven approach, to learn from the available data to understand the drivers of health inequalities in RIC communities.

To inform the commissioning and delivery of RIC interventions the BIRU will provide data comparing the outcomes of RIC communities to the rest of Bradford District and England, thereby highlighting the biggest gaps in health to be addressed by the programme. In addition, this data will identify the drivers of these inequalities to inform the best interventions to address these needs. Within RIC communities we will do deep data dives to highlight profiles of those at most risk of particular health issues, thereby enabling RIC to target approaches where necessary.

Integrating Research and Practice to enhance the evidence base of interventions to reduce health inequalities

There is strong evidence for the benefits of prevention, early identification and intervention on reducing negative health, social and emotional outcomes across the life span [1].

However, whilst the biological determinants and medical interventions of diseases are well evidenced, there remains a paucity of robust evidence for effective interventions that tackle the social determinants of health [2]. The reasons for this lack of evidence can, at least in part, be attributed to: a) silo working of academics and service providers; b) a 'one size fits all' approach without consideration of adaptations required to engage seldom reached communities; and c) a focus on individual behaviour change and a lack of consideration of the complex system and wider determinants of health inequalities that influences behaviours [3].

The development of complex public health interventions often takes a top-down approach where researchers design and evaluate interventions without the involvement of those

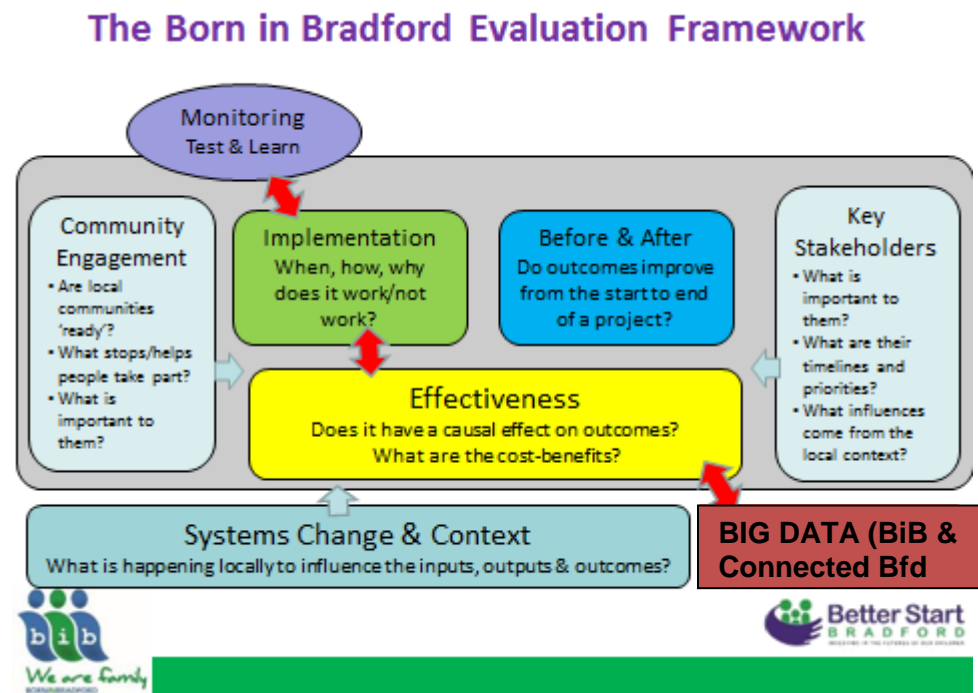
delivering or receiving the interventions. However, service providers' knowledge of the complex context that they are working in, and participants' responsiveness, are key elements to an intervention's effectiveness in real world settings [4]. In contrast, commissioners and service providers often seek out and develop interventions that are potentially relevant to their complex systems, local context and local community needs without consideration of the evidence base. The consequence of such silo working is that many interventions that are currently being delivered within public health services have promise in a real world setting, but little robust evidence of effect [2, 5]. For example, whilst there is robust evidence of the benefits of intervening early in childhood to prevent lifelong physical and psychological morbidity, there are only a small number of evidence based interventions available for delivery [5].

Working with the CCG, the BIRU aspires to enhance the evidence base of interventions to reduce health inequalities and ensure these are successfully delivered in practice. Through the evaluation of interventions that are being delivered as a part of usual practice, the BIRU has a valuable opportunity to contribute to the evidence base in public health research.

Effective interventions are those that are able to recruit and engage participants, be delivered with fidelity in real-life settings, and have a positive impact on one or more key outcomes. BIRU will employ the Born in Bradford applied evaluation framework (see Figure 1). Quasi experimental approaches can be employed to infer causal effects of interventions in a timely manner [6,7]. Where interventions have evidence of effectiveness, modelling approaches will be used to infer impacts in the Bradford community. These methods will be augmented with implementation evaluations, which are crucial for understanding how the intervention performs in practice and in different contexts [8].

The use of routinely collected data for evaluations offers an efficient method which is both pragmatic and affordable. Its use reduces resources required for data collection, as well as the burden on participants, and allows answers to be considered that are based on outcomes directly relevant to policy and practice [7,9]. The BIRU will use the big data from Connected Bradford and the BiB birth cohorts to allow in-depth evaluation of the health and economic impact of individual interventions across different services and organisations as well as the cumulative effect of multiple interventions.

Figure 1: The BiB Evaluation Framework



Community Readiness & Engagement

Alongside these evaluation methods this evaluation framework ensures that community and stakeholder voices are integrated throughout, incorporating the local contexts within which people live, and the needs and priorities of communities and services. In particular the community readiness approach will develop strategies to better engage seldom heard communities, by considering the lived experiences and resourcefulness of communities, enabling services to work 'with', rather than deliver 'to' people.

The Community Readiness Model was developed in the United States to assess levels of readiness and achieves this by placing a community in one of nine possible stages of readiness ranging from 'no awareness' right through to 'professionalisation' [9]. Through the application of the Community readiness tool, programme implementers are able to successfully gauge readiness along with guidance on tactics and strategies to help communities become ready for an intervention. The BIRU will assess community readiness in the prioritised areas of:

- End of Life Care and Care plans in the South Asian community
- Vaccine acceptability in the RIC population
- Disease management of Diabetes and Hypertension in the South Asian community
- Bowel Cancer Screening in the South Asian community

What has the BIRU discovered to date?

Evidence for RIC interventions

In preparation for the selection of interventions in RIC, the BIRU worked with YHEC to produce rapid literature reviews of some of the larger programmes proposed.

See Report: YHEC Review V1.0

BIRU also completed a Delphi consensus with academic experts and RIC partners to prioritise projects for implementation and identify key risks.

See Report: Delphi Consensus V3.0

The RIC population

City CCG has a relatively young population with a high birth rate (6.6 per 1000, compared to 3.9 per 1000 in England). Intervening early has lifelong effects on the health, wellbeing and social outcomes. RIC should focus significant attention on early interventions (in coordination with other agencies that affect upstream determinants).

Many patients registered with GPs in the RIC area live outside the Central locality border. More impact on RIC outcomes will be made by focussing any place-based interventions in areas of high registrations.

There is also high mobility of the RIC population (high movement in and out, and a high number of migrants) which has implications for the way services are delivered.

Older people who live in the RIC area are more likely to live alone, almost 80% of those aged 65 or more live in single person households, indicating that ways to address isolation and engagement with health services are likely to yield benefits.

Bradford City CCG

Percentage of patients registered with GP practice by LSOA

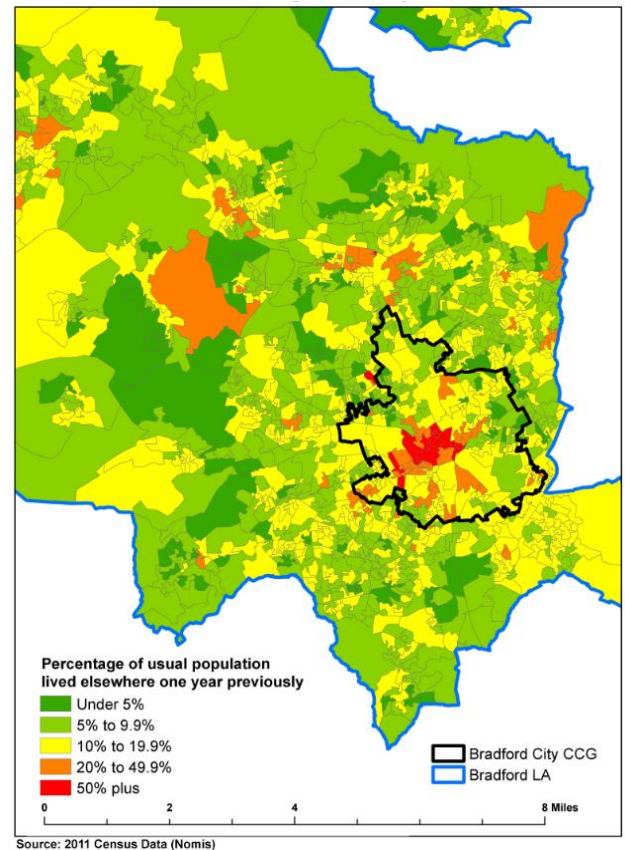
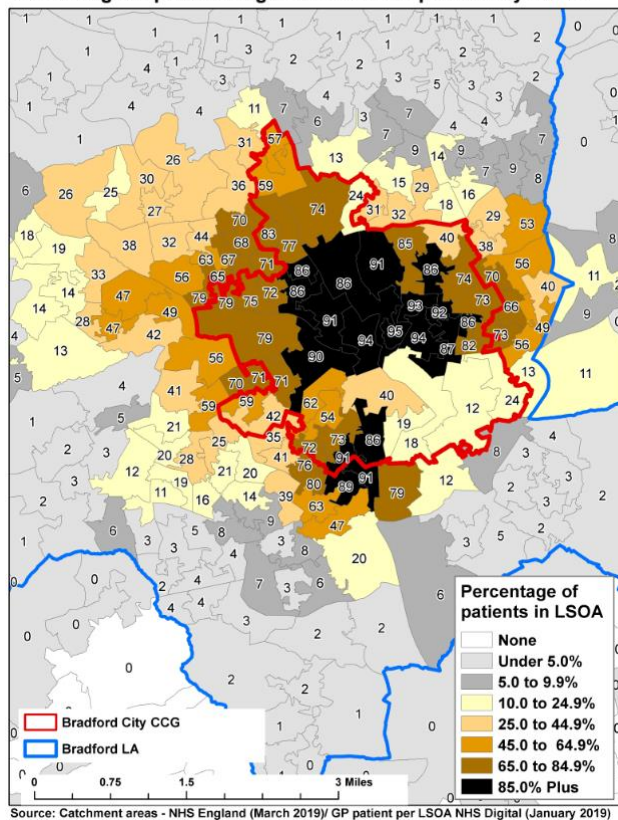


Figure 1: Map showing the proportion of LSOA residents that are registered with a GP practice affiliated with Bradford City CCG

Figure 3: Map showing the percentage of usual population that had lived elsewhere one year previously (internal migration inflow)

Health Inequalities in RIC

Infant and child mortality is relatively high in City CCG (6.6 per 1000 compared to 3.4 in England; 24 per 1000, compared to 11 respectively). Interventions focussed on reducing the risks of infant and child mortality should be prioritised and evaluated carefully for impact. For example:

- a. Interventions to reduce smoking in pregnancy should target the White British and White Other populations where almost 50% of women at booking appointment report smoking.
- b. Focus on reducing BMI in girls and young women and postpartum, as over 50% of pregnant women are overweight or obese which increases risk of poor pregnancy outcome and child obesity.
- c. Continue to intervene to reduce the rate of consanguinity, which though falling, is still high in the Pakistani heritage population (29%) and is a key the cause of raised child mortality rates due to genetic conditions (accounting for 43% of child deaths compared to 25% nationally).
- d. Interventions to reduce road traffic accidents should be focussed on hotspots where children are more frequently killed or seriously injured on roads.
- e. Childhood overweight/obesity is high (28% of Year 6 children RIC compared to 20% nationally) and oral health is extremely poor. As well as targeted interventions, early preventative interventions should be implemented to tackle diet and oral health.
- f. Effective targeted interventions to improve the management of childhood asthma are needed as there is a higher rate of asthma (14.5% in RIC compared to 10% nationally) and a high rate of emergency admissions for respiratory problems (4.7 per 1000 compared to 3.9 nationally). There is relatively poor usage of corticosteroid medication (especially in S.Asian heritage children who have a much raised risk of A&E visits).

Mortality from respiratory disease and cardiovascular disease in the under 75s is higher than the national average, (though respiratory disease is improving).

The mortality rate for those aged 65 to 74 years in RIC is 75% higher than the rate for England; life expectancy is 6 years lower for men and 4 years lower for women than the England average. Rates of avoidable mortality are 70% higher in RIC compared to England as a whole.

Women under 65 in the City CCG population are particularly at risk of type 2 diabetes. Interventions to identify and actively manage those at risk (such as hypertension detection and follow up, and control of diabetes) should be prioritised.

See BIRU paper: *Preliminary report on the City CCG population. V2.0 2020* for further details

The impact of Covid-19

Covid-19 has been widely reported to have exacerbated health inequalities with ethnic minorities, those living in deprived areas and those with co-morbid conditions most likely to be affected by this illness.

In addition, however, there are many invisible public health concerns caused by the pandemic and lockdowns. Our recent Born in Bradford survey of over 2000 parents and 1000 children aged 9-13 showed that:

- one-third of families are financially worse off now than before the pandemic
- 1 in 10 have severe financial difficulties - having to regularly skip meals and fearing eviction from their homes.
- Families where the main earner had been furloughed or where they were self-employed were particularly at risk of financial insecurity.
- These same families also reported a dramatic increase in poor mental health with 19% of these (an increase of 8% from pre-covid) reporting clinically significant symptoms. The largest predictor of poor mental health in the lockdown was loneliness.
- There was also an increase in poor health behaviours (e.g. smoking, alcohol consumption and reduced physical activity) caused by the pandemic and lockdown. Of note a lack of any physical activity was more apparent in parents and children from south Asian backgrounds.
- White British children reported high rates of social anxiety and less stable family dynamics, but high rates of physical activity.
- South Asian children reported feeling happy and secure at home but doing low rates of physical activity.

Acceptability Of Covid-19 Vaccination and Trust in Organisations

In a survey to our BiB families (N=550, Oct-Dec 2020) 29% of respondents stated that they **would** want to take a COVID-19 vaccine, 10% said that they **would not** want the vaccine. Most stated they had not thought about it (29%) or were not sure about it yet (32%). Views on having their children vaccinated were very similar.

Those most likely to want the vaccine are: White British; living in the least deprived areas; have had a flu vaccination this year, trust the NHS and local hospital. The main reason given for this decision was to protect themselves and their families from COVID-19 or because they had an underlying health condition

Those most likely to not want the vaccine are: From the 'other' ethnic minority group (includes other South Asian, White Other, and a host of other minority ethnic groups); Living in the most deprived areas; Do not trust the NHS; Do not trust faith organisations. The main reasons given for this decision were that the vaccine has been rushed and there is not enough research done meaning the vaccine might not be effective or could be harmful.

Those who are undecided/have not thought about it are most likely to be: Of Pakistani heritage; Unsure whether they trust any local organisations; Distrust the local council greatly. There were two main reasons given for this decision: a) it was too early to decide - they don't have the time/space to think about a vaccine right now and b) they need more information to make an informed decision.

Overall, the most trusted organisations were the NHS, local hospital and schools. The least trusted were the government and the local council. The most common key information sources were TV, the internet and health professionals.

See <https://www.bradfordresearch.nhs.uk/findings-and-resources/>

Effectiveness Evaluation of RIC programmes

The BIRU team have to date identified the following interventions as ready for effectiveness evaluations. For each of the following interventions there are plans to evaluate the impact and cost effectiveness using Connected Bradford data to look at the outcomes of participants, and matched controls (people with similar characteristics from outside the RIC community who were not offered the programme):

- Proactive Care Team
- Admiral Nurses
- CLICS

In addition, a grant has been submitted for a national evaluation of CLICS programmes, with BIRU & RIC as collaborators

For the following intervention there are plans to evaluate the impact and cost effectiveness using BiB birth cohorts and routine midwifery data to look at outcomes of women receiving the service and matched controls (women with similar characteristics who were not offered the programme):

- Continuity of Care in midwifery

In addition, an Applied Research Collaborative grant has been submitted to conduct a national evaluation of models of continuity in deprived and ethnically diverse communities with BIRU, RIC and Better Start Bradford as collaborators.

The BIRU team:

Directors: Dr Josie Dickerson, Josie.dickerson@bthft.nhs.uk; Prof John Wright

Academic Lead: Prof Trevor Sheldon

Academic Advisors: Profs Kate Pickett & Richard Cookson

Researchers: Drs Brian Kelly, Bo Hou & Rachael Moss

References

1. Wickham S, Anwar E, Barr B, Law C, Taylor-Robinson D. Poverty and child health in the UK: using evidence for action. *Archives of Disease in Childhood*. 2016;101(8):759-66.
2. Bambra C, Joyce KE, Bellis MA, et al. Reducing health inequalities in priority public health conditions: using rapid review to develop proposals for evidence-based policy, *J Public Health*. 2010; 32 (4) 496–505. <https://doi.org/10.1093/pubmed/fdq028>
3. Dickerson, J, Bird PK, Bryant M, et al. Integrating research and system-wide practice in public health: lessons learnt from Better Start Bradford *BMC Public Health*. 2019 DOI 10.1186/s12889-019-6554-2
4. Hawe, P. Lessons from Complex Interventions to Improve Health. *Annu. Rev. Public Health*. 2015;36;307–23
5. Hurt L, Paranjothy S, Lucas PJ, et al. Interventions that enhance health services for parents and infants to improve child development and social and emotional well-being in high-income countries: a systematic review. *BMJ Open* 2018;8:e014899. doi: 10.1136/bmjopen-2016-014899
6. Dickerson J, Bird P, McEachan RRC, et al. Born in Bradford's Better Start: an experimental birth cohort study to evaluate the impact of early life interventions. *BMC Public Health*, 2016, 16(1), pp.1–14. Available at: <http://dx.doi.org/10.1186/s12889-016-3318-0>.
7. Craig P, Cooper C, Gunnell D, et al. Using natural experiments to evaluate population health interventions: new MRC guidance. *J Epidemiol Community Health*. 2012;66(12):1182–6.
8. Dharni N, Dickerson J, Willan K et al. Implementation and process evaluation of Better Start Bradford projects: A Protocol Paper. *BMJ Paediatrics Open* 2019;3:e000479. doi: 10.1136/bmjpo-2019-000479
9. Raghupathi W, Raghupathi V. Big data analytics in healthcare: promise and potential. *Health Inf Sci Syst*. 2014;2:3.
10. Edwards, R. W., Jumper-Thurman, P., Plested, B. A., Oetting, E. R., & Swanson, L. (2000). Community readiness: Research to practice. *Journal of Community Psychology*, 28(3), 291-307. [https://doi.org/10.1002/\(SICI\)1520-6629\(200005\)28:3<291::AID-JCOP5>3.0.CO;2-9](https://doi.org/10.1002/(SICI)1520-6629(200005)28:3<291::AID-JCOP5>3.0.CO;2-9)

Reports:



YHEC Report for
BIHR final 9 September



Delphi consensus
report_V3.0.docx



BIRU Preliminary
Report on City CCG P

The impact of Covid-19 on Bradford families:

<https://wellcomeopenresearch.org/articles/5-228>

<https://www.medrxiv.org/content/10.1101/2020.11.30.20239954v1>

<https://www.bradfordresearch.nhs.uk/findings-and-resources/>