

Institution: 10007140 Birmingham City University		
Unit of Assessment: 03: Allied Health Professions, Dentistry, Nursing and Pharmacy		
Title of case study: Complex and Multiple Birth: Enhancing guidance, practice and understanding		
Period when the underpinning research was undertaken: 2011- 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Merryl Harvey -MH Annalise Weckesser - AW Elaine Denny -ED Carolyn Blackburn - CB	Role(s) (e.g. job title): MH – Professor of Nursing and Family Health AW – Senior Research Fellow ED – Professor of Health Sociology CB - Reader in Interdisciplinary Practice and Research with Families	Period(s) employed by submitting HEI: MH: 1995 – 2019 AW: 2012 – present ED: 1988 – 2013 CB: 2014 – present
Period when the claimed impact occurred: 2013-2020		
Is this case study continued from a case study submitted in 2014? No		
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Birmingham City University's research on complex and multiple birth experiences enhanced clinical care guidance and practice. The first (2017) NICE guidance on preterm birth follow-up care cites BCU research to improve care for the estimated 95,000 babies admitted to a neonatal unit in the UK. The research led to improved care pathways for multiple birth families at one NHS Trust and to a 10% reduction in post-caesarean section infection rates at another. It featured in a BBC video on caesarean sections with over 1.7 million views worldwide and raised public understanding about multiple birth families through the Library of Birmingham's "Multiple Realities" exhibition seen by an estimated 78,750 visitors.</p>		
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>More than half of pregnancies that involve multiple fetuses have a preterm birth and a higher percentage of caesarean sections. Birmingham City University's (BCU) research on these complex and multiple birth experiences has been funded through competitive grants, attracting nearly £2.5 million pounds in external funding from the National Institute for Health Research (NIHR) (see Underpinning External Grants detailed in Section 3).</p> <p>Complex Births (Preterm)</p> <p>The information needs of parents of preterm infants in neonatal units was not well understood prior to Harvey et al.'s (2013) qualitative study [R01] for ePrime: Evaluation of MR Imaging to Predict Neuro Developmental Impairment in Preterm Infants (NIHR funded: RP-PG-0707-10154). R01 evidenced parents' need for information about the routine care and interventions their infants receive on the neonatal unit, as well as about the long-term prognosis of their babies. The study further evidenced the need for health professionals to provide information in manageable amounts because the emotional impact of having a preterm baby affects parents' ability to retain information. Blackburn and Harvey's (2019) mixed methods study [R02] evidenced the lack of support from health and education professionals for parents following pre-term birth in the UK. R02 recommended health and education services provide more timely support that accounts for both the emotional and practical needs of parents. Such support needs were found to be especially acute for parents not prepared for the possibility of pre-term birth.</p> <p>Complex Births (Caesarean Sections)</p>		

Findings from the PREPS (2020) [R3] Trial, Vaginal Preparation at caesarean section to Reduce Endometritis and Prevent Sepsis – a feasibility study of Chlorhexidine Gluconate (NIHR: Research for Patient Benefit, PB-PG-1215-20013), evidenced the efficacy and acceptability of vaginal cleansing (in addition to routine cleansing of the abdomen pre-CS) in the prevention of surgical site infections (SSIs). SSIs are common infections following CS that contribute to maternal morbidity and mortality. PREPs included the first qualitative study, conducted by Weckesser et. al. (2019) [R4], focused on women's CS recovery in relation to infection and infection prevention. R04 found women undergoing CSs need more information about what constitutes a 'normal' post-operative recovery as well as infection prevention information provided in a written format (rather than verbally post-surgery). It further evidenced how CS stigma, and women's feelings of guilt for needing a CS, negatively affected their recovery experiences.

Multiple Births

Harvey's and Denny's (2014) study [R05] examined the health and social care needs of mothers of multiples. R05 evidenced an absence of support from healthcare professionals (including midwives and health visitors). The study recommended enhanced healthcare professional knowledge about multiples to improve information and support provision for such families. BCU research [R06] (2018) was the first to investigate health visitors' experiences, as well as training and professional development needs, when supporting multiple birth families. R06 recommended the creation of an evidence base to inform and improve health visitor practice when supporting multiple birth families.

Collectively, this research [R01-R06] furthered understandings of, and provided robust evidence on, the information and support needs of families experiencing multiple births and/or complex births (including preterm and CS births).

3. References to the research (indicative maximum of six references)

All below publications have been subject to peer review. BCU researchers in bold.

R01: Harvey ME, Nongena P, Gonzalez-Cinca N, Edwards AD, Redshaw ME, ePRIME Research Team. Parents' experiences of information and communication in the neonatal unit about brain imaging and neurological prognosis: a qualitative study. *Acta Paediatrica*. 2013;102(4):360-5. <https://doi.org/10.1111/apa.12154>

R02: Blackburn C, Harvey M. "We weren't prepared for this". Parents experiences of information and support following the premature birth of their infant. *Infants & Young Children*. 2019; 32(3):172-185. <https://doi.org/10.1097/IYC.000000000000142>

R03: Morton VH, Hewitt CA, Wilson A, Farmer N, Weckesser A, et al. Vaginal preparation with chlorhexidine at cesarean section to reduce endometritis and prevent sepsis: A randomized pilot trial (PREPS). *Acta Obstet Gynecol Scand*. 2020; 99:231-239. <https://doi.org/10.1111/aogs.13737>

R04: Weckesser A, Farmer N, Dam R, Wilson A, Morton VH, Morris RK. Women's perspectives on caesarean section recovery, infection and the PREPS trial: a qualitative pilot study. *BMC Pregnancy and Childbirth*. 2019;19(1):245. DOI: [10.1186/s12884-019-2402-8](https://doi.org/10.1186/s12884-019-2402-8)

R05: Harvey ME, Athi R, **Denny E**. Exploratory study on meeting the health and social care needs of mothers with twins. *Community Practitioner*. 2014;87(2):28-31. <https://pubmed.ncbi.nlm.nih.gov/24597136/>

R06: Alamad L, Denton J, **Harvey ME** (2018) Health visitors' experiences supporting multiple birth families: An exploratory study. *Journal of Health Visiting* 6(12); 610-620.
<https://doi.org/10.12968/johv.2018.6.12.610>

Underpinning external grants:

- Evaluation of MR Imaging to predict neuro developmental impairment in preterm infants (**ePrime**), National Institute for Health Research, RP-PG-0707-10154, 2009-2015; Grant holding institution: Imperial College Healthcare NHS Trust, PI: A. D. Edwards (Imperial College, London), Collaborators: M. Rutherford (Imperial College, London) **M. Harvey** (Birmingham City U – subcontracted by Imperial College London <https://www.npeu.ox.ac.uk/research/projects/22-eprime-mr-imaging>) M. Thomson, (Imperial College London), M. Redshaw (U of Oxford), et al. ; £2,165,489.00; <https://fundingawards.nihr.ac.uk/award/RP-PG-0707-10154>
- **PREPS** - Vaginal Preparation at caesarean section to Reduce Endometritis and Prevent Sepsis – a feasibility study of Chlorhexidine Gluconate, NIHR: Research for Patient Benefit, PB-PG-1215-20013, 2017-2019; Grant holding institution: Birmingham Women's and Children's Hospital, PI: R.K. Morris (U of Birmingham), Co-I's: **A. Weckesser** (Birmingham City U), V. Hodgetts Morton (U of Birmingham), et. al.; £247,416.00; <https://fundingawards.nihr.ac.uk/award/PB-PG-1215-20013>
- Supporting Multiple Birth Families: The Experiences and Perceptions of Health Visitors Working in England and Wales, Burdett Trust for Nursing Grant, 2018-2020; Grant holding institution: Birmingham City U; PI: **M. Harvey** (Birmingham City U), Co-Is: **L. Alamad**, N. Turville, J. Denton, et al. (Birmingham City U); £6,246.26

4. Details of the impact (indicative maximum 750 words)

Preterm Births: Enhancing National Clinical Guidance

Harvey's ePrime research informed (2017) NICE guidance, the *NG72: Developmental Follow-up of Children and Young People Born Preterm* [S01]. Extensively citing R01, the NG72 recommends health practitioners support parents by providing information about "the unit and routine neonatal intensive care unit care," "care of the infant," and "long-term prognosis" of babies, as well as by "giving the right amount of information" (to not 'overwhelm' parents) [S01: p. 468-493]. The Chief Executive of Bliss, a charity for babies born premature or sick and a named supporting organisation in the NG72 quality standard (QS169), states, "Professor Harvey's ePrime study informs guidance on the information provision to parents and carers... Babies born premature have the best long-term outcomes when their parents are fully informed about, and involved in, their decision-making and care, both during their time on the neonatal unit and in the years afterwards. Having access to clear, evidence-based information is key to parents being able to fulfil this role" [S02]. The NG72, the first of guidance of its kind, provides clear and comprehensive evidence to inform quality standards, setting out a framework for consistent high-quality follow-up care for the estimated 95,000 babies born preterm every year in the UK.

Preterm Births: Enhancing Professionals' Understandings and Practice

Blackburn and Harvey disseminated pre-published [R02] findings at the (July 2017) BCU conference, 'Born Early: Early Care and Education Experience of Children Born Prematurely,' attended by health and education professionals. Anonymous survey feedback reflects professionals' enhanced understandings of the needs of children born preterm and subsequent practice change [S03]. A Perinatal Clinical Psychologist reported they would use their enhanced knowledge to "ease transitions between ICU, HDU and Special Care or to Paediatric ICU" [Survey Response A16 in S03]. An education practitioner stated, "As a team we will ask all parents about whether their child was premature, and we will work with schools to educate them more fully about the impact of prematurity on their pupils with physical and neurological disorders" [Survey Response A10 in S03].

Caesarean Section Births: Enhancing Clinical Practice and Public Understandings

PREPS findings informed *Reducing Infections in Obstetrics* (RIO), Birmingham Women and Children's Hospital's (BWC) quality improvement initiative [S04]. The BWC Specialty Obstetrics and Gynaecology Registrar involved in the initiative, states the "RIO, informed by findings from PREPS (PI: Prof K Morris, University of Birmingham; Co-I's Dr A Weckesser, Birmingham City University and Dr V Hodgetts Morton, BWC), entailed the implementation of an 'Infection Prevention Bundle'" [S05]. PREPS evidence on the use of chlorhexidine in vaginal cleansing procedures [R03] and patients' need for written information on preventing infection post caesarean section (CS) [R04] was incorporated into the Infection Prevention Bundle [S04: p.2]. BWC implemented the RIO from January 2019 and "by January 2020 the SSI (surgical site infection) rate had decreased by 10%" [ibid.]. A reduction of significance as the hospital's SSI rate (21.08%) was twice that of the national average (9.6%) in 2018 [S04: p.1]. BWC delivers an average of 8,200 babies a year; approximately 30% of deliveries are by CS as the hospital attracts high-risk pregnancies from across the region. SSIs contribute to maternal morbidity and mortality and disrupt postnatal recovery, breastfeeding and infant-parent attachment. Reduced SSI rates are key to improving maternal health and neonatal wellbeing.

Weckesser featured in a BBC educational video [S06], 'C-Section Guilt: I felt like I'd failed', sharing PREPS findings [R04] on women's experiences of stigma and guilt following caesarean section. The BBC's Senior Broadcast Journalist who produced the video states: "[The BBC] measures success with the discussion arising from the content as this means the audience was really engaged with the video. There were thousands of comments from women who said this video changed their perspective and made them feel less alone" [S07]. In September 2020, the video broadcasted on the BBC website, News Channel and social media outlets and "received 1,761,400 views across the BBC UK and international facing website, Facebook, Twitter and Instagram" [ibid.].

Multiple Births: Enhancing Training, Practice and Understandings

BCU research [R05-06 and more] led to, and forms the curriculum basis for, 'The Individualised Care of Multiple Birth Families from Conception to 1 Year,' CPD module for health professionals (Levels 6 & 7). As a result of the module, an East & North Hertfordshire Trust (ENHT) Midwife created a continuous support pathway for women experiencing a multiple pregnancy within her Trust, for which she won the Chief Midwifery Officer Silver Award (2020) and was shortlisted for the Royal College of Midwives' (2020) Johnson's Excellence in Maternity Care & Innovation [S08]. The ENHT Midwife states that "the research informed module has been significant in the success in improving our understanding of the unique support required by families of multiples, and has helped to shape and inform how we deliver our provision for these families" [ibid.].

BCU multiple births research [R05-06 and more] led to the "Multiple Realities" photography exhibition. For the month of September 2019, the Library of Birmingham hosted the exhibition in the main entrance hall, through which approximately 78,750 visitors pass monthly. Anonymous attendee surveys demonstrate the exhibit improved understandings of the challenges faced by multiple birth families by those who do not have multiples in their immediate family [S09]. "[T]he exhibition made me think about the difficulties of raising twins and the loss involved with multiple births..." [Survey Response P26 in S09].

BCU research [R05-06 and more], undertaken with the Elizabeth Bryan Multiple Births Centre (EBMBC) founded with the Multiple Births Foundation (an international authority on multiples) informed the (March 2020) *Supporting Multiple Birth Families: Establishing an Evidence-Base to Inform Health Visitor Practice*. The CEO of Twins Trust, the only UK-wide charity dedicated to supporting families of multiples, states "research by Professor Harvey and colleagues identified the need for Standards for Healthcare Specialists for Multiple Births to improve the quality of care provided to families. Their work ensures that the views and experiences of families are included within evidence based guidance" [S10].

5. Sources to corroborate the impact (indicative maximum of 10 references)

S01: (2017) NICE Guidelines (NG72): Developmental Follow-up of Children and Young People Born Preterm, <https://www.nice.org.uk/guidance/ng72/evidence/full-guideline-pdf-4543744861> (accessed 17.3.2021)

S02: Testimonial from The Chief Executive of Bliss [Named corroborator 001] corroborating impact of ePrime research

S03: (2017) *Born Early: Early Care and Education Experience of Children Born Prematurely* Conference Survey Summary Report - <https://bcuassets.blob.core.windows.net/docs/s02e005-born-early-survey-feedback-132593446949193658.pdf> (accessed 17.3.2021)

S04: Reducing Infections in Obstetrics (RIO)- Standard Operating Procedure, Birmingham Women's and Children's Hospital

S05: Testimonial from Birmingham Women's Hospital Specialty Obstetrics and Gynaecology Registrar [Named corroborator 002], who implemented the RIO, corroborating impact of PREPS research on infection reduction

S06: (2020) BBC video, "C-section guilt: 'I felt like I'd failed,' featuring Weckesser's PREPS research - <https://www.bbc.co.uk/news/av/stories-53969231> (accessed 17.3.2021)

S07: Testimonial from the BBC Senior Broadcast Journalist [Named corroborator 003], producer of 'C-section guilt' video, corroborating impact of Weckesser's PREPS research

S08: Testimonial from The East & North Hertfordshire NHS Trust Midwife [Named corroborator 004] corroborating impact of BCU multiple birth research on practice and subsequent awards

S09: (September 2019) Library of Birmingham, 'Multiple Realities' Exhibition Survey Report

S10: Testimonial from The CEO of Twins Trust [Named corroborator 005] corroborating impact of BCU multiple births research

All above sources of corroborating evidence, without direct URL links, are available from the BCU research team.