Final Report

Evidence for Better Lives

Foundational Study

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on behalf of the EBLS consortium

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Lay Summary

This report presents main findings from the Evidence for Better Lives Study-Foundational Research (EBLS-FR). EBLS-FR is a proof-of-concept study on the way towards realising a long-term birth cohort project on child and family well-being in eight medium sized-cities in middle-income countries. The report focusses on the lessons learned with respect to organisation, management, sampling, recruitment and data collection. Core findings include the following:

- The consortium successfully realised 1208 interviews of pregnant women including a follow-up assessment after birth as well as the collection of biological samples. A high-quality comparative birth cohort study in middle-income countries conceptualised around the factors that affect the development of child and family well-being and realised by an interdisciplinary consortium with a strong policy focus is feasible. It would be potentially ground-breaking contribution to human sciences and an enabler of child and family strengthening strategies.

- Different manifestations of poor maternal well-being and psycho-social risk tend to be correlated. A prospective birth cohort study should broadly focus on the dynamics of comorbidity across domains of mental and physical well-being, and consider multiple levels of an ecological explanatory framework.

- EBLS-FR shows that research on healthy child development needs to adequately consider the variety of familial, neighbourhood and structural contexts that shape children's lives globally. In particular, it is necessary to overcome the focus on WEIRD (Western, Educated, Industrialized, Rich and Democratic) societies and advance the understanding of mechanisms that vary across cultures.

- As part of the EBLS-FR collaboration, the consortium has developed the knowledge on how to develop a large collaborative study, how to manage decisions-making processes effectively, and how to coordinate contracts, ethical approval procedures, protocol and publication policy.

- The Project Management Group played a crucial role in the management of the project. For a larger project it may be beneficial to distribute responsibilities for core tasks more widely among members of the Consortium. This would help to promote a shared ownership of the overall study.

- Achieving comparability, coordinating work flows, monitoring work schedules, organising all aspects of data management, managing quality control and maintaining effective communication require careful planning of staffing resources. For a larger study it would be essential to plan for a managing director as well as a full-time research coordinator in each site to facilitated the overall workflow.

- The EBLS-FR has realised a successful portfolio of public engagement and policy impact activities and developed an active capacity development policy. The structures constitute a valuable basis for a long-term collaboration that links research excellence, policy impact and capacity development. This strategy could be further strengthened with a possible intervention component and cost allocation that is commensurate with the goals.

- To date, the EBLS-FS has led to 14 publications co-authored by 15 senior academics and 20 early career researchers. Members of the Early Career Network made exceptionally valuable contributions to research output. In a future larger study, the training of early career scholars and students engaged with EBLS should be prioritised as a core project component that is provided from the start. Regular online workshops with participation from all study sites would be critical. Also, it would be important to plan a limited number of visiting scholarships that would allow early career researchers to collaborate with colleagues in other sites on publication and research projects.

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1 Introduction

This document is the final report on the foundational stage of the Evidence for Better Lives Study (EBLS), which started in June 2018 and ended in December 2020. The project mainly comprises a proof-of-concept study on the way towards realising a long-term birth cohort project on child and family well-being in medium sized-cities across different continents and cultures in lower- and middle-income countries. As much as it is a concluding report for the present study, it is also a reflection about the next steps on the way forward.

The report focusses on the lessons learned from the foundational study in respect of organisation, management, sampling, recruitment, and data collection. Although it will also summarise the research completed so far, the main purpose is not to present substantive findings. Rather, its focus is on analysing the main questions that we aimed to answer with the Evidence for Better Lives - Foundational Research (EBLS-FR), namely: Can we establish and maintain a consortium of research teams around the Evidence for Better Lives Study? What does it take organisationally and operationally to conduct such a study? And what lessons can be learned from these experiences for the planned next stage of EBLS?

Although we set out to conduct a 'pilot' study, what we achieved has yielded important scientific findings and impact, making it an important study in its own right. Throughout the report we therefore refer to the study as the Evidence for Better Lives Study - Foundational Research (EBLS-FR).

This report is structured into six chapters. We first provide an overview of the background of the study (chapter 1). We then describe the development of the organisational and management structures of EBLS (chapter 2). In chapter three we present an overview of all stages of the fieldwork from questionnaire development to data documentation. In chapter four we discuss our capacity-building and policy-impact approach. In chapter five we present the main findings relating to EBLS. At the end of each chapter, we reflect on lessons learned that can impact a future larger study.

Origins and Background

The idea for EBLS was born during the preparations for the First Global Violence Reduction Conference at the University of Cambridge, held on 17-19 September 2014. This event, jointly organised with the World Health Organization, aimed to advance and energise the field of global violence prevention. It encouraged the academic community to consider the large-scale epidemiology of violence across human societies, to propose evidence-based answers to how human violence can be reduced, and to articulate the fundamental questions that future research needs to answer in order to better support policy decisions that can achieve population-wide reductions in violence (Krisch et al., 2015).

The conference was timed well politically: On 24th May 2014 the World Health Assembly had adopted a resolution for "Strengthening the role of the health system in addressing violence, in particular against women and girls, and against children", which for the first time gave the WHO a mandate to address violence. Also, a year later, on 25th September 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development. This includes several targets that aim to strengthen efforts to significantly reduce violence, especially against women and girls, advance child mental well-being, and strengthen capacity and governance in low resource contexts (García-Moreno & Amin, 2016).

The wealth of ideas shared at the conference led the PI of this study, Prof. Manuel Eisner, to consider what kind of far-reaching study could support the violence reduction agenda at an international level. The result was a first concept note on Evidence for Better Lives that was shared with colleagues (Appendix 1). It comprises many of the core ideas that continue to shape the project: The plan was to include 6-8 study sites that reflect the diversity of cultures and societies globally; to realise a comparative longitudinal study with samples of around 800 participants per site starting at age 10 and continuing for 10 years with annual assessments; to develop a locally adapted violence prevention strategy delivered through a randomized controlled study and supported by international welfare organisations, and to make capacity building with a shared commitment to violence reduction a backbone of the project.

Basic Design Choices: The Marbach Castle Meeting

The kick-off for EBLS was an informal gathering at Marbach Castle on 5-6 December 2015, facilitated by the Jacobs Foundation. Most participants had been actively involved in the Global Violence Reduction conference, including Dr Susan Bissel (UNICEF), Dr Christopher Mikton (WHO), Prof. Manuel Eisner (University of Cambridge), Dr Patricia Lannen (Optimus Foundation), Prof. Joseph Murray (Federal University of Pelotas), Dr David Steven (New York University) and Prof. Cathy Ward (University of Cape Town). Other participants were leading specialists in developmental and prevention research, including Prof. Avshalom Caspi (Duke University), Prof. Terrie Moffitt (Duke University), Prof. Tia Palermo (UNICEF Innocenti) and Prof. Pasco Fearon (University College London) and a postdoctoral researcher, Dr Aja Murray (University of Cambridge and subsequently University of Edinburgh), who was to take a significant role in the further development of EBLS. The meeting served to share initial ideas, explore options and tentatively identify key features of EBLS (see Appendix 2 for the workshop's report).

Participants concurred that EBLS could make major contributions to advancing the scientific understanding of child development in different cultural and social contexts, with a focus on low- and middle-income countries, which are underrepresented in research studies. Also, there was a shared sense that academic innovation, policy impact and capacity building should go hand in hand as equally important goals. Experts pointed out that it would be more beneficial to conceive of EBLS as a thematically broad research initiative on the dynamics of child and family well-being in diverse human societies rather than a study narrowly focused on violence. There were different views on the feasibility of an experimental preventive intervention component; while there was general agreement that an early intervention in different locations would be highly valuable, the concern was that adding an intervention to an already demanding design might pose a serious risk to the success of the overall project.

Selecting the Study Sites and Conducting a Site Assessment: The UBS Optimus Study

The next stage of EBLS, The Feasibility Study, was made possible through grants by the UBS Optimus Foundation, the British Academy/Leverhulme, and the Cambridge Humanities Research Grants Scheme (Oct 2016-March 2018). Its goal was to identify study sites and to set up a strong research consortium. The challenge entailed finding a group of long-term academic partners, each of whom would have the capacity to lead a large and complex longitudinal study in their country over many years, a track record of policy engagement around child well-being, a good chance of finding sustained support for prevention action among local policy makers, and an interest in engaging in a wide-ranging, interdisciplinary intellectual exchange.

The process included several steps. In November 2016, a longlist of possible countries and academic partners was generated. The longlist comprised some 20 countries and included information on criteria such as whether there was evidence for potential policy support (e.g. whether the country was a member of the End Violence Partnership) and whether there was academic capacity (whether we could identify potential academic partners with a track record of policy engagement and research in developmental prevention science).

At a meeting in December 2016, the study initiators reviewed a draft list of potential study sites, a detailed protocol for conducting site reviews, the main pillars of the study's design and organisational models for collaboration. Furthermore, we consulted colleagues and created lists of researchers who could lead a cohort study successfully, who had a strong link to prevention and policy in fields relating to child and family well-being, and who represented different disciplines and cultural regions in the world.

On that basis, site visits with colleagues in 10 potential partner universities were arranged, namely Prof. Susan Walker (University of the West Indies, Jamaica), Prof. Joseph Murray (Federal University of Pelotas, Brazil), Prof. Joseph Osafo (University of Ghana), Prof. Adriana Baban (Babes-Bolyai University, Romania), Prof. Cathy Ward (University of Cape Town, South Africa), Prof. Mark Tomlinson (University of Stellenbosch, South Africa), Dr Siham Sikander and Prof. Assad Hafeez (Health Services Academy, Pakistan), Prof. Asvini Fernando (University of Kelaniya, Sri Lanka), Prof. Thang Vo Van (Hue University of Medicine and Pharmacy, Vietnam), and Prof. Bernadette Madrid (University of the Philippines). The visits aimed to discuss the project and practical challenges with potential Consortium members more fully and to introduce it to stakeholders, university officials and civil society representatives (February-May 2017). The selection of study sites was also discussed. The challenge was that in some cases the universities were located in large metropolitan areas like, for example, Accra. However, the EBLS study aimed to focus on medium-sized (pop 150-800,000) cities, which were more manageable for sampling, data collection and policy engagement purposes. Colleagues from nine of the 10 potential partner universities could eventually join the Consortium, which would eventually represent eight study sites.

Figure 1 shows the site locations for EBLS as well as countries that were considered at earlier stages of the selection process. Additionally, Table 1 shows selected characteristics of the study sites including core economic, cultural and demographic indicators of the countries where they are located.

The study sites represent different types of 'cities'. Koforidua, Cluj-Napoca, Worcester and Hue are regional administrative centres and economic hubs. Kingston is the national capital of Jamaica. Tarlai is a relatively disadvantaged large settlement within the Islamabad Capital Territory. Ragama is a suburban region in the outer parts of the Colombo Metropolitan Area, while Valenzuela is an independent city within Metropolitan Manila.

Figure 1   Map of Effective EBLS Study Sites, Sites considered and Sites of Additional Current EBLS-related Studies
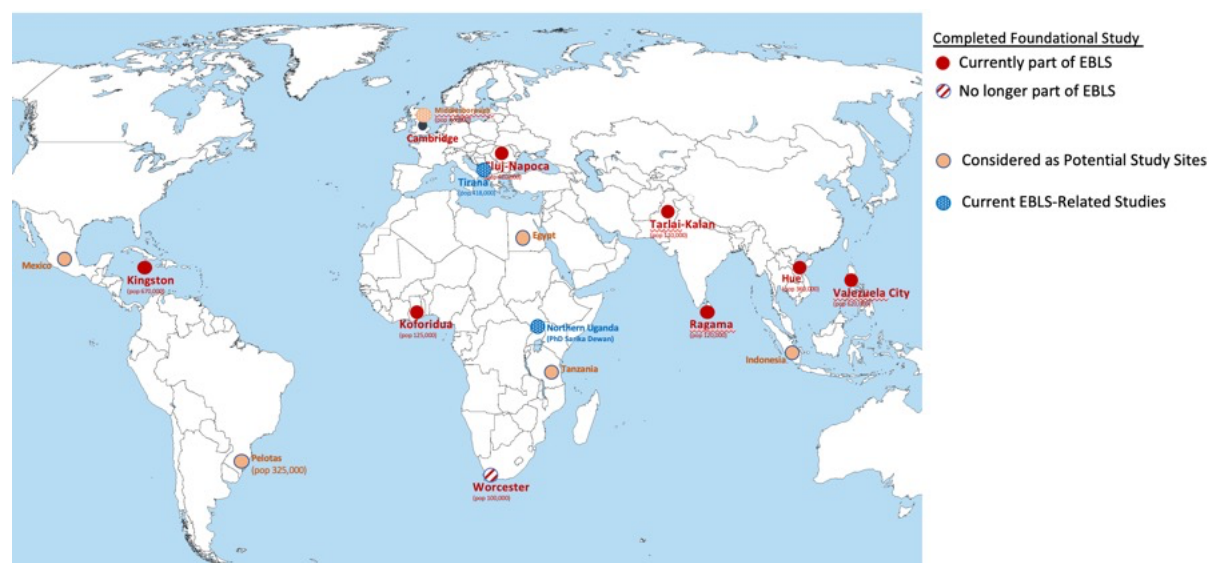

Table 1 Selected Characteristics of the Study Sites

	Kingston (Jamaica)	Koforidua (Ghana)	Worcester (South Africa)	Cluj-Napoca (Romania)	Tarlai (Pakistan)	Ragama (Sri Lanka)	Hue (Vietnam)	Valenzuela (Philippines)
City Population	670,000	140,000	97,000	325,000	110,000	780,000	355,000	620,000
Main Religion(s)	Christian (Protestant)	Protestant Pentecostal Catholic Christian Muslim	Various Christian Denominations	Romanian Orthodox Calvinist Catholic	Muslim	Buddhist Christian Muslim	Buddhist Confucian/Taoist	Christian (Catholic)
Language(s)	English Patois	Akan	Afrikaans Xhosa	Romanian Hungarian	Urdu	Singhalese	Vietnamese	Tagalog
WHO Region	The Americas	African Region	African Region	European Region	Eastern Mediterranean	South-East Asia	Western Pacific	Western Pacific
End Violence 'Pathfinder Country'[1]	YES	NO	YES	YES	NO	YES	NO	YES
GDP pc at purchasing power parity[2]	$8,690	$4,490	$13,090	$25,150	$1,550	$12,470	$6,450	$10,030
% Population Ages 0-14[2]	23%	39%	29%	15%	35%	24%	23%	32%
Life Expectancy at Birth[2]	76	64.4	63.6	75.2	66.5	75.3	76.3	69.3
< Age 5 mortality rate per 1000 live births[2]	15.3	58.8	43.3	9.0	78.8	9.4	21.6	27.1
Health Expenditure as % of GDP[2]	5.9%	5.9%	8.2%	5.0%	2.7%	3.0%	5.7%	4.4%
Income Inequality, Gini index (x 100)[2]	45.5	43.5	63.0	35.9	33.5	39.8	35.3	40.1
Gender Inequality (x 100)[2]	41.2	53.8	38.9	31.1	54.1	35.4	30.4	42.7

Sources:
1. Global Partnership to End Violence against Children, https://www.end-violence.org
2. World Bank Indicators, https://data.worldbank.org/indicator

Figure 2   Group Photo of the First EBLS Consortium Meeting, 8 August 2017

Note: From left to right: Fahad Abbasi (Health Services Academy, Pakistan), Diana Taut (Babeș-Bolyai University, Romania), Arunasalam Pathmeswaran (University of Kelaniya, Sri Lanka), Claire Hughes (University of Cambridge, UK), Pasco Fearon (University College London, UK), Siham Sikander (Health Services Academy, Pakistan), Asvini Fernando (University of Kelaniya, Sri Lanka), Sara Valdebenito (University of Cambridge, UK), Aja Murray (University of Cambridge, UK), Adriana Baban (Babeș-Bolyai University, Romania), Manuel Eisner (University of Cambridge, UK), Cathy Ward (University of Cape Town, South Africa), Susan Walker (University of the West Indies, Jamaica), Sara Skeen (University of Stellenbosch, South Africa), Susan Chang-Lopez (University of the West Indies, Jamaica), Mary Catherine Maternowska (UNICEF-Innocenti, Italy), Lương Thanh Bảo Yến (Hue University of Medicine and Pharmacy, Vietnam), Sandra Hernandez (University of the Philippines, Philippines), Bernadette Madrid (University of the Philippines, Philippines), Michael Dunne (Queensland University of Technology, Australia), Vo Van Thang (Hue University of Medicine and Pharmacy, Vietnam).

Establishing the Consortium and Conducting the Pilot

The EBLS research Consortium was established at the First EBLS Conference on 7-9 August 2017.[1] It brought together, for the first time, senior colleagues and future co-PIs from the eight study sites, junior colleagues from most sites (Dr Diana Taut, Dr Sarah Skeen, Dr Yến Lương Thanh Bảo, Dr Sandra Hernandez, Fahad Abbasi, Susan Chang-Lopez), representatives of international organisations (Dr Alex Butchart, WHO and Dr Mary Catherine Maternowska, UNICEF Innocenti), and the Consortium members and collaborators from UK universities (Prof. Pasco Fearon, Prof. Claire Hughes, Dr Aja Murray, Dr Sara Valdebenito).

Developing a sense of academic community through shared activities while benefitting from a fine English summer, played an important role. The Consortium also reviewed four working documents that shaped the future Foundational Study (Appendix 3).

A first document outlined the conceptual framework and core research questions that EBLS should be designed to answer. It proposed an open conceptual architecture around the development of children's psycho-social health - including cognitive, emotional, moral and behavioural development -

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[1] See https://www.vrc.crim.cam.ac.uk/VRCconferences/ebls2017

as the main focal area of interest, although physical health including all injuries due to external causes should also be examined. Topics that should be developed as priorities included: (1) Exposure to Violence and Other Childhood Adversities; (2) Caregiver Psycho-social Wellbeing and Child Development; (3) Environmental Adversities: Exposure to Toxins, Maternal Substance Use, and Nutritional Deficits; (4) Mediating Mechanisms: Executive Functioning, Moral Development, and Theory of Mind; (5) Resilience and Susceptibility, (6) Context-Dependence of Developmental Mechanisms; (7) Utilisation of Health Care Provision and Innovations in Prevention Science.

A second document summarised the results of the Feasibility Study and the interviews with 21 experts in the field. Amongst others, the document proposed to aim for a sample size, for the full study, of 1500 participants per study site; to recruit participants during the third trimester of pregnancy so that prenatal exposure to adversity can be better understood; and to focus on Dry Blood Spots (DBS) and hair samples as biological samples.

The third document outlined the terms of reference, including objectives, organisation, data management, fieldwork and publication, and the fourth document developed a plan for the impact and capacity building strategy.

The discussion of these documents prepared the proposal for the third stage of EBLS, which was submitted to Fondation Botnar on 18th August 2017. Its main goal was the testing all the elements of a larger study at a smaller scale, so the insights gained could be used to adapt and improve the design of the future main study. The main objectives were the following:

- Learn about effective ways to coordinate and manage activities between the coordinating team and collaborators in the United Kingdom and the eight study sites so that study results were comparable and of high academic quality.

- To test routine elements required for the main study such as instrument translation procedures, fieldworker recruitment and training, study participant contact, informed consent processes and interview administration.

- Go through all ethics approval procedures and other permissions required for conducting the study.

- Gain enough experience about the sampling and contacting process to develop a tenable approach for the main study.

- Test and understand important logistical and financial challenges in each site that needed to be considered for the Foundational Study.

- Conduct pilot interviews with approx. 150 pregnant women in each study site.
- Test all stages of the collection, storage, and delivery of biological samples with the exception of the lab analyses.
- Develop and text a secure database management structure for all steps of the project.
- Identify the challenges that need to be resolved before a main study can be started.

As the project developed, the Consortium decided to enhance the value of the study by adding a number of research components, supported through additional funding. They include four main added components, namely:

- To recontact the study's participants about three to five months after the birth of the child and to conduct a brief follow-up assessment.

- To analyse the collected hair samples and dry blood spots for cortisol levels and inflammatory markers, two important markers for the activation of the stress-response system.

- To conduct, in one study site (Sri Lanka), fathers' interviews with the partners of all study participants at baseline and at the first follow-up (subject to consent by the mother).

- To conduct, in five study sites (Philippines, Vietnam, Ghana, Romania and Jamaica) a second follow-up when the child was about 20-24 months old, while EBLS-FR children and their parents lived through the uncertainties and strains of the COVID-19 pandemic.

In the following chapters we will discuss all aspects of the third stage of EBLS, including the aspects initially planned in the research proposal and those added to the project as the study progressed.

1.1   Lessons Learned

A well-executed comparative birth cohort study in low- and middle-income countries conceptualised around the factors that affect the development of child well-being and realised by an interdisciplinary consortium of researchers with a strong policy focus represents a valuable contribution to knowledge. If conducted to high standards, it would be an innovative, potentially ground-breaking contribution to human sciences and an enabler of child and family well-being.

The experiences of the Feasibility Research, outlined in the next chapters, suggest that such a study can be done, but that taking it to scale would require further careful planning. Two general challenges are worth mentioning at this stage, one organisational and the other substantive.

The Organisational Question

How could one build a stable basis for the long-term collaboration between a large number of academic partners required to realise parallel birth cohort studies? The challenge is highlighted by the fact that since the initial preparations for the study, several members have retired or are about to retire, for some their professional paths have taken them in new directions, while others could not continue for personal reasons. In a full study designed to establish a collaboration over five or 10 years such changes can be a serious threat.

Probably the best solution to this challenge would be to examine whether a future EBLS Consortium could be supported through a declared high-level commitment of the universities involved, in addition to the establishment of institutionally backed research groups whose members are appointed to contribute to the collaborative work for the whole period the study would run. Also, it would be important to think about succession early, e.g., by costing mid-career researchers in the project early on who would be expected to take the reins when the original PI retires. This could help to enhance career development through engagement in a large-scale collaboration.

The Substantive Question

 Should a future main EBLS study include an intervention component (in the sense of a randomised controlled experiment) or not? This issue has been discussed repeatedly within the Consortium and external experts. Our assessment is the following: the pilot study has demonstrated unambiguously that realising an observational study with annual (or more frequent) assessments (and including questionnaire development, training, piloting, recruitment and scheduling) is an immense logistical task. Adding the delivery of an intervention with high fidelity in different sites would be a further challenge.

On the other hand, there would be clear benefits. In terms of impact, one could expect much stronger policy engagement than for a pure observational study, and in respect of scientific value there is no precedent to a multi-site early childhood preventive intervention embedded in a long-term developmental study. On balance the Consortium should make the intervention option a planning priority. Possibly, the financial and organisation model established some 20 years ago in the Zurich Project on Social Development from Childhood to Adulthood (z-proso) – a longitudinal study in Switzerland initiated by Prof. Eisner - might provide a valuable template. In that study, the local government authorities provided funding and logistical support for the interventions, while philanthropies (mainly the Jacobs Foundations, which has also been supportive of the early stages of EBLS) and the Swiss National Research Council provided funding for the longitudinal study.

2 Organisational Structure, Management and Communication

EBLS-FR is a collaboration of 13 universities and eight study sites in four different continents. Such an international collaborative research project poses high exigencies and pressures on organisational structure, management and communication. To prepare for these challenges, we collected, throughout 2017, evidence on how to organise complex projects. A literature review revealed various general factors believed to contribute to the likelihood that large collaborative research projects are successful. They include, amongst others, a shared project vision and aligned goals, a collaborative working style, a reflexive dialogue, established relationships, careful management of research team relationships, flexible planning within firm work structures, and the use of regular, multi-modal communication (Easterby-Smith & Malina, 1999; Sibbald et al., 2014; vom Brocke & Lippe, 2015).

Additionally, we also conducted online searches on websites of existing research projects for 'terms of reference' documents and descriptions of management models. Furthermore, we conducted a series of interviews with over 20 colleagues and role-models in the research community to learn from their experience in managing large longitudinal studies, as well as their expertise in specific technical aspects. For example, we benefited greatly from a meeting with Prof. Jo Boyden at the University of Oxford, who generously shared some of her experience as the Director of the Young Lives study, a large longitudinal study of children and adolescents in Ethiopia, India, Peru and Vietnam (Barnett et al., 2013).

2.1 Organisational Structure

Details of the organisational structure for the EBLS-FR Consortium are described in the terms of reference (see Appendix 3). Figure 3 provides an overview. The main elements are as follows:

The *EBLS Consortium* ('the Consortium') was formed of all project's co-investigators. The Consortium was collectively responsible for conducting the study. The project was led by the principal investigator, Prof. Manuel Eisner. For the day-to-day running of the project, he was supported by the *Coordinating Team* ('CT') based at the Institute of Criminology, at the University of Cambridge.

The role of the CT was to oversee the whole project; offer input to the sites on all strategic decisions; provide support to site teams; coordinate activities across the sites; develop templates of communication materials, ethics approval and informed consent; develop the questionnaire; manage the translation process; coordinate data management; and lead on the data analysis and publication of results. The core group of the CT included Prof. Manuel Eisner as the overall PI, Dr Sara Valdebenito as the research associate, and Laura Campo as research coordinator. Dr Sara Valdebenito's extensive management experience was of great benefit to the CT. In the first months, the team was also joined by a database manager (Dr Carolyn Brechin). After her departure in December 2018, it was decided to divide the required work among the existing team members and to allocate specialist work on an ad-hoc basis. Additionally, the administrator of the Violence Research Centre, Dr Simone Castello, supported the EBLS project with the organisation and management of events, editing and rewriting documents for print and online, and publicity including the website pages and social media presence.

Figure 3   EBLS Organisational Structure
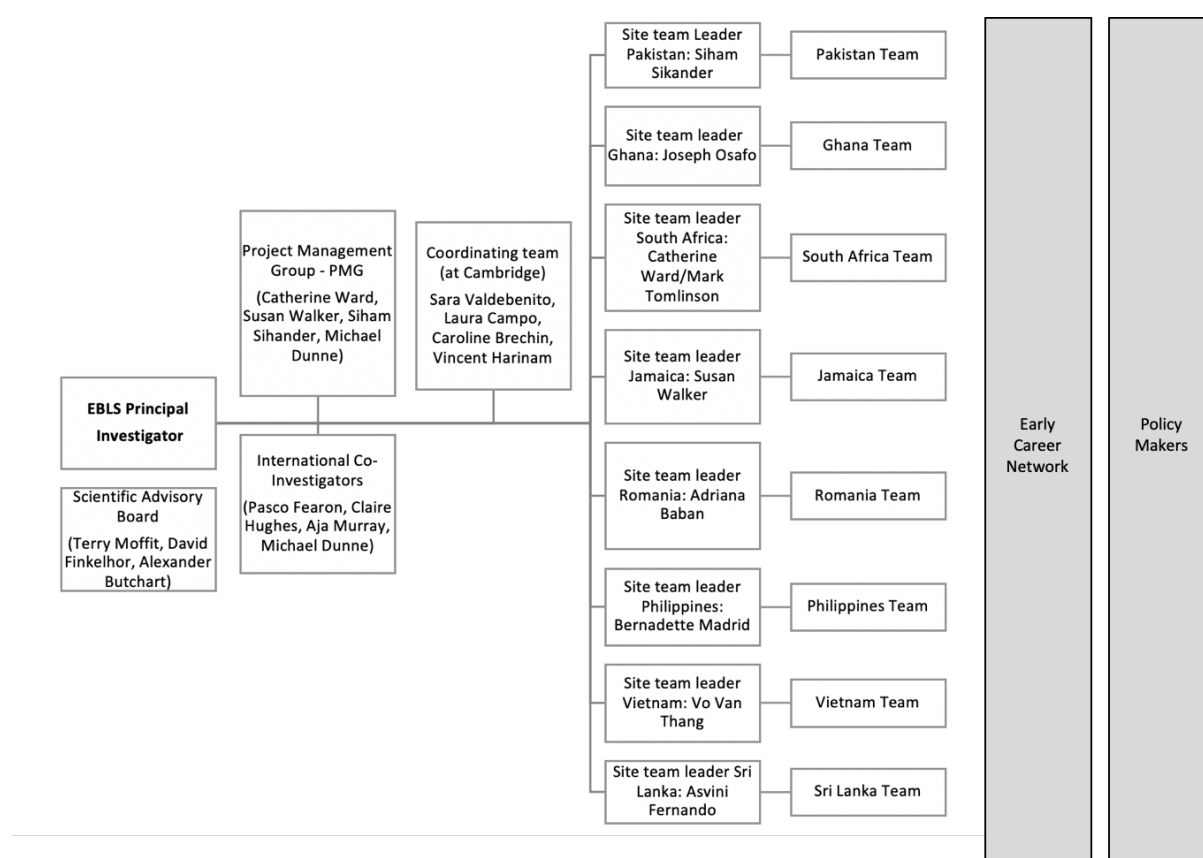
The *Project Management Group* ('PMG') was created to jointly coordinate the day-to-day management of the project. It included the principal investigator and four Consortium members, three of whom also directly led site teams. It met bi-weekly and was consulted on all matters that related to the overall progress of the project. It reported to the EBLS Consortium, which comprised Prof. Michael Dunne (Australia and Vietnam), Prof. Manuel Eisner (UK), Dr Siham Sikander (Pakistan), Prof. Susan Walker (Jamaica) and Prof. Catherine Ward (South Africa).

At the level of partner sites, the organisational structure comprised the *Site Team Leader and their team, which included* the fieldwork coordinator and the fieldworkers. The *Site Team Leader* is one or more senior academics who represent the site as co-investigators in the consortium. They oversee the research in each site. They also develop partnerships with local and national policy makers and stakeholders; explore options for co-funding and support; analyse site-specific data and publishing results and disseminate the findings to local stakeholders.

The *Scientific Advisory Board* consisted of representatives of international organisations supportive of EBLS and a group of leading academic experts. The members of the scientific board played the role of advisors and were asked for advice for questions relating to policy-impact strategy, coordination with international organisations, strategic scientific and funding decisions. We also consulted members of the board for scientific advice, especially Prof. Terrie Moffitt and Prof. David Finkelhor.

2.2   Contractual Arrangements and Publication Policy

In consultation with all consortium members, the collaboration for the Foundational Study was set up in such a way that the University of Cambridge acted as the Lead. The University of Cambridge therefore held the contract, on behalf of all co-applicants, with the main funding body, the Fondation Botnar.

The collaboration among the Consortium members was regulated by a series of bi-lateral collaboration agreements signed by the respective academic partner and the University of Cambridge. Each collaboration agreement specified the agreed work, milestones, budget and intellectual property rights. The terms of reference of the contracts specified the organisational structure of the EBLS Consortium (see above) and a data and publication policy.

The data and publication policy was modelled on a template kindly shared with us by the PRogramme for Improving Mental Healthcare (PRIME) project, a consortium of research institutions and ministries of health in Ethiopia, India, Nepal, South Africa and Uganda, led by the University of Cape Town (Breuer et al., 2019; De Silva et al., 2016). In the document we specified several principles aimed at supporting long-term sustainable collaborative research: all EBLS pilot study data were to be jointly owned by all members of the EBLS Consortium; country teams had privileged access to their own data; authorship of early career researchers was to be encouraged in the spirit of capacity building; prospective publication projects were to be submitted to a publications portal and would be reviewed by the Publications' Committee, which could also recommend additional co-authors.

2.3   Project Coordination

Maintaining effective communication throughout the project was a major task. Challenges related to effectively managing consultation and consensus-building among the co-investigators, overseeing day-to-day workflows, responding to questions, providing support, managing deadlines, and sharing intellectual input and ideas. Several communication and interaction fora helped to coordinate activities.

Site Visits: In 2017 and 2018 all study sites were visited at least once by members of the CT or other UK-based co-investigators. The visits helped to better understand the social, cultural and economic characteristics of the study sites, to meet with project leaders in the collaborating universities, and to arrange meetings with stakeholders such as international organisations, public health clinic directors, child protection specialists and private sector organisations. They also were an opportunity to present the EBLS project and its goals to a wider local audience. We also consulted partners and local stakeholders about which data and research questions would be a priority for them.

EBLS Symposia and Conferences: Four major events were organised to facilitate strategic discussions in the entire group and with scientific advisors, and to present progress to the general public. Two symposia and a conference were held in Cambridge while one symposium was organised in conjunction as part of the *Ako Para sa Bata* International Conference organised by the Child Protection Network Foundation in Manila, Philippines.

7-9 Aug 2017   *Evidence for Better Lives: A Global Initiative for Research on Child Psychosocial Well-being and the Prevention of Violence against Children.* University of Cambridge, Sydney Sussex College.

10 May 2018   *Evidence for Better Lives: Cohort Studies as a Vehicle for Improving Global Child Psychosocial Health,* University of Cambridge, Institute of Criminology.

18-23 Nov 2018	*Evidence for Better Lives: Stakeholders Summit and Consortium Workshop* (in conjunction with *Ako Para sa Bata* Child Protection Conference in Manila, Philippines), City of Manila and Tagatay.
24/25 Nov 2019	*EBLS Symposium, Addressing Violence against Children in Eight Cities across the World*. Forty experts, stakeholders and academics from all study sites, University of Cambridge.

Weekly Zoom Meetings: EBLS started to use the video communication platform Zoom on a regular basis well before COVID-19 made it a common experience. Zoom meetings were held on a weekly basis, alternating between two types of meetings. The most important instrument for day-to-day coordination across EBLS sites was the bi-weekly Consortium Meeting with all co-investigators or others nominated as site representatives. These meetings served to update all Consortium members on progress, to discuss project-related decisions and to share information on site concerns. Alternating with the Consortium Meetings, we held bi-weekly online meetings of the Project Management Group (PMG). The PMG served to coordinate the day-to-day management of the project, and it regularly reported to the Consortium. Both meetings were usually held at 12:30-13:30 GMT to straddle the 15 time zones from Brisbane (GMT +10) to Kingston (GMT -5). The meetings were limited to one hour and were generally supported by PowerPoint slides.

Publication Committee Meetings: As data became available in the second half of the project, more meetings were held by the Publications Committee, led by Prof. Catherine Ward and Dr Aja Murray. The Committee reviewed paper proposals submitted through the EBLS publication portal, made suggestions on possible co-authors and their contributions, and approved the proposals.

Additional Site Meetings: The coordinating team in Cambridge had regular contact with all site teams though email. Additionally, regular ad-hoc zoom meetings between members of the CT in Cambridge and site teams helped to discuss arising issues, address questions and support local teams.

Emails: Emails were the workhorse of the coordination and internal communication process. They allowed quick interaction with all involved partners. The full volume of emails exchanged during the project is not known. However, a search in the mpe23@cam.ac.uk email archive shows that some 25,600 emails are stored with the string 'EBLS' since 2015. Figure 4 shows the number of emails per month. It suggests that at the peak activity in 2018 and 2019, around 20 emails were sent or received every day.

The Study Protocol: A comprehensive study protocol was critical for planning all research activities, aligning aims, coordinating the fieldwork across the sites, and obtaining ethical approval (Appendix 5). Dr Sara Valdebenito led the development of this document. It includes sections that describe the study design, details of the data collection process, the data management approach, the data analysis, research ethics, and project management. Furthermore, the study protocol also comprises annex documents important for the fieldwork. They comprise: (1) scripts for contacting potential participants; (2) an information package for participants; (3) templates for the informed consent form; (4) an identification and screening questionnaire; (4) the main baseline questionnaire; (5) the mothers' follow-up questionnaire; (6) the translation protocol; (7) the biological samples questionnaire; (8) the access to local services template document; (9) the emergency protocol; and (10) the safety protocol for fieldworkers. The extensive annex documents were designed to support the achievement of the most critical goal, namely, to collect data across the study sites with the highest accuracy and comparability.

*Figure 4   Monthly number of emails with the string "EBLS" stored in the mpe23@cam.ac.uk archive
per year, 2016-2021*
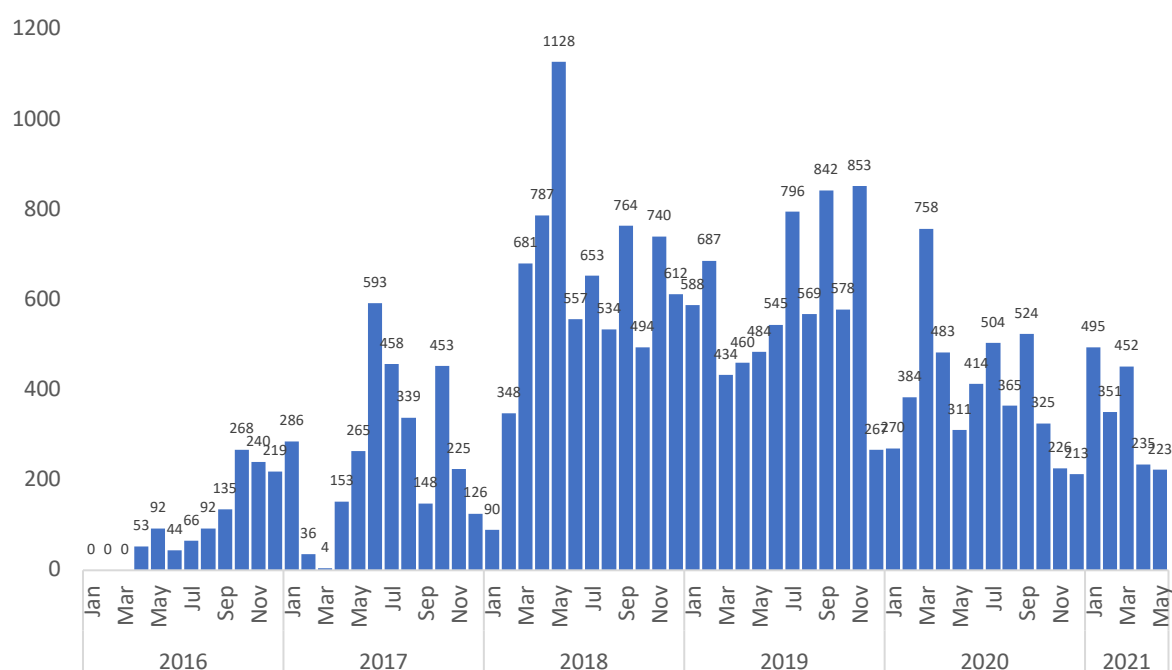
Note: Count based on the personal outlook email archive.

Work began in April 2018 and a first draft was sent out to all Consortium members in July 2018. Proposed substantial changes were discussed at Consortium Meetings. A version ready for submission to ethical boards was completed by the end of August. The draft went through several iterations of feedback by Consortium members and revisions, until the final version was completed.

2.4   Ethics Approval

The fieldwork required ethical approval from two ethics review boards at the University of Cambridge (the Ethics Committee of the School of the Humanities and Social Sciences and the Ethics Committee of the School of Biological Sciences) as well as to one or - in some cases - several ethics review boards in each of the eight study sites. Study protocols were submitted in August 2018. Teams in Pakistan, Sri Lanka, Jamaica, South Africa and the Philippines were additionally required to submit an agreement regarding the biological sample analysis. These additional "Material Transfer Agreements" (MTA) involved Cambridge, each of the sites and the laboratories carrying out the analyses.

Ethical approvals were generally obtained between November 2018 and April 2019. In Ghana, there were delays with the purchase of the indemnity cover. This meant that biological samples could not be collected during most of the fieldwork. Participants were invited to return to the hospital facility for collecting the biological samples at a later date. However, despite incentives for participants and staff, only a few samples were obtained.

2.5   Additional Project Co-Funding

Appendix 6 provides an overview of the financial contributions to the EBLS study since the first stage in 2014. It shows that the total funding raised for the EBLS project to date is £1,028,000. The

initial two stages of EBLS were supported with funding contributions of £95,600 by the Jacobs Foundation, the Optimus Foundation, the British Academy, and the Cambridge Humanities Research Grants Scheme.

The third stage of EBLS, starting in July 2018 and continuing through December 2020, was made possible through a core grant by Fondation Botnar of £528,000. Additionally, members of the Consortium raised a total of £328,000. These additional funds allowed additional activities and components that enhanced the study. To conduct essential preparatory work before the beginning of the study, the Violence Research Centre, University of Cambridge, provided funding for Dr Sara Valdebenito (50%) for eight months (£18,977).

It was possible to support extensions of the initial project through additional funding. Some activities were supported through the Wolfson discretionary research fund awarded to the PI, Manuel Eisner, on occasion of his appointment to the Wolfson Chair in 2014. This included contributions to the costs for the follow-up data collections (£16,111), the analyses of the hair samples (£17,000), the analyses of the dry blood spots (£16,500) and the third wave of data collection in Ghana and Romania (£8,000). Furthermore, the College of Arts, Humanities and Social Sciences ODA Global Challenges Internal Fund at the University of Edinburgh provided funding for a Delphi Study on the Future of Birth Cohort D Studies (£16,943).

Additional resources were raised to allow early and mid-career researchers to contribute to the scientific programme of the EBLS study, in order to foster capacity building. These included a three-year scholarship awarded to Huyen Phuc Do at the Queensland University of Technology (£100,634) as well as a British Academy/Wolfson Fellowship at the University of Edinburgh for Dr Aja Murray (£129,955), which allowed her to contribute more academic time to the EBLS study.

Furthermore, more financial support was found for impact-related activities. These included contributions provided by the ESRC Impact Acceleration Account held by the University of Cambridge (£19,916) and by the Consuelo Foundation in the Philippines (£19,349) to facilitate the Policy Summit in Manila, the publication of the Policy Report "Addressing violence against Children" (Evidence for Better Lives Consortium, 2019), and the production of two promotional short videos on the EBLS study – one for the general public and one for policymakers. Additionally, the Botnar Fondation supported the EBLS Conference 2019 (24th-25th November, Cambridge) with £8,495.39 (10,000 CHF).

Finally, the collection of biological samples required an insurance to cover EBLS participants against negligent and non-negligent harm. The insurance for each country was purchased by the University of Cambridge's Insurance Department. The University of Cambridge's Global Challenges Research Fund covered the additional costs of £21,070.

2.6   Proposals for the Main EBLS Study

During the duration of the EBLS-FR, the Consortium developed and submitted two proposals for an upscaled EBLS study. The first proposal was developed for submission to the 2017 call for Interdisciplinary Research Hubs to Address Intractable Challenges Faced by Developing Countries, i.e., before the start of the Foundational Study. The scheme was funded through the Global Challenges Research Fund, a five-year £1.5 billion funding scheme. The call invited proposals from "eligible UK research organisations to establish and lead a number of challenge-led and impact-focused GCRF Interdisciplinary Research Hubs", with impact focus, research excellence, global partnership and organisation and leadership as major selection criteria.

A four-page intention-to-submit document was presented for internal selection at the University of Cambridge in October 2017. The proposal was selected to be put forward for the next (outline) stage, along with eight other projects by teams at the University of Cambridge. The outline proposal was submitted in mid-November 2017. We were advised on 2 February 2018 that the proposal had been rejected at the outline stage. No detailed feedback was provided on the reasons for the rejection.

The second proposal was prepared for submission to the Economics and Social Sciences Research Council (ESRC) 2020 Centres Competition. The competition funds research centres for up to £10 million at full economic costs. ESRC thinks about these centres as "long-term investments which strengthen the social science landscape in the UK". Successful proposals should have an ambitious research agenda, make a substantial impact, build capacity, encouraging interdisciplinarity, and enable research collaboration in the UK and internationally (Economic and Social Research Council, 2019).

Research centres funded under this stream are generally not focused on one single research project, however ambitious and collaborative it may be. We were therefore advised against developing a proposal exclusively based on the EBLS study. Rather, we developed the idea of a Global Violence Research Centre, which would bring together different research strands and work closely with local, national and international stakeholders. The EBLS study was to become a major pillar of the overall programme. In July 2020 we were advised that the internal selection committee of the University of Cambridge had chosen the Global Violence Research Centre for submission to ESRC. The outline proposal was submitted to ESRC on 6th October 2020.

The proposal for a Global Violence Research Centre was rejected in December 2020. Feedback was received from three reviewers. While reviewers had much praise for the proposal, critical points referred to the lack of inclusion of Latin America, the focus on quantitative methods, insufficient time allocated to the principal investigator, and the lack of specifics about institutional (i.e., University of Cambridge) commitment.

2.7   Lessons Learned

Effective management of a research study requires close collaboration of researchers, especially when mobilising multi-country and multi-disciplinary teams (Zikos et al., 2012). Also, in multicentre studies communication among all participating institutions must be clear, continuous, and well documented (Bangdiwala et al., 2003) .

Through the pilot study, the Consortium has collectively gained experience in how to coordinate a large collaborative study, how to manage decisions-making processes effectively, and how to develop the foundations of a large cross-national project including contracts, ethical approval procedures, protocol and publication policy. Most of what we learned would be a valuable resource for a larger study. At the same time, planning for the main EBLS study would benefit from revisiting a number of issues regarding the overall organisational structure that emerged.

Broadening Responsibilities: The Project Management Group played a crucial role in the management of the project. However, for a larger project it may be beneficial to consider sharing responsibilities for core overall tasks like capacity development, database management, policy impact and advocacy among members of the Consortium, with appropriate funding support. Such a structure would also help to mitigate North-South differences in, amongst others, expert power, institutional reputation, access to funding and resources, non-academic work-load and experience (Mago, 2017; Pineda et al., 2020).

Coordinating Team: The two persons in the coordinating team were pivotal for achieving comparability, coordinating work flows, monitoring work schedules, organising all aspects of data management, managing quality control and maintaining effective communication, among others. In a larger comparative birth cohort, the level of staffing would need to be reviewed.

Contractual Structure: The contractual arrangement for the pilot study was that the University of Cambridge held responsibility for the overall project, and that contracts between Cambridge and each consortium partner regulated the contributions that each partner made to the project. This arrangement yielded significant advantages as it established transparent lines of accountability and responsibility. However, such a hub and spokes contractual model may hinder the goal of achieving a shared ownership of the study and would have to be revisited.

A Managing Director: Although the organisational structure of the EBLS has been effective overall, the Coordination team suggested that additional players in the organisational structure would have been helpful in the study's management. In particular, it would be essential to plan for a managing director who shares responsibility on a day-to-day basis with the PI, as well as a full-time research coordinator in each site to facilitate the overall workflow.

Site Management Structures: In the initial stages of the Foundational Study, it became clear that organisational structures in the various sites had to be adapted to local needs. However, a lack of clarity about responsibilities could occasionally lead to delays and misunderstandings. For a larger study, it would be crucial to include a senior coordinator role per site in the planning, who would have authority to make operational decisions on all aspects of the data collection process.

Day-to-Day Communications: The communications within the EBLS Consortium were largely effective and occurred mainly through emails and meetings involving different levels of the organisational structure. However, on some occasions it was challenging to ensure that all the EBLS researchers were aware of the discussed topics and decisions made in every meeting, given the considerable number of study members within each team. Sporadically, one of the sites might not be represented in a Consortium meeting. This was solved by collecting minutes in every meeting, which were sent to the whole Consortium via email, as well as kept in the Consortium's shared folder. Suggestions for improving internal communications included more pro-active communications about changes and decisions made in the sites and a reinforcement of the number of the one-to-one meetings between the Coordinating Team and EBLS sites.

Overhead Funding (buy-out time for senior academics): Throughout the pilot study, EBLS benefited from highly motivated senior academics and their willingness to provide space and administrative support for the project. This would not be sustainable if a research infrastructure for a larger study needed to be maintained over several years. In particular, one would need to consider adequate overheads and dedicated time for senior academics who contribute to such a project.

Funding Strategy: Most funding for the Foundational Study was provided through Fondation Botnar or various UK-based contributions. We believe a larger study would benefit from efforts to secure site-specific co-funding.

Budget Control: Coordinating budget reports and funding required a fluid interaction between site teams and the coordinating team, as well as a rapid response to unexpected budget adjustments. A lesson learned from the EBLS-FR is that more careful and comprehensive budgeting is essential, including the consideration of unexpected costs (e.g., personnel and materials) and a more frequent budget monitoring.

# 3 Questionnaire Development, Fieldwork Coordination and Data Collection

The EBLS Foundational Study was organised around one overarching goal: to demonstrate that the Consortium can accomplish, to high academic standards, a comparative birth cohort study in eight low- and middle-income countries across the world. This chapter describes how we worked towards this goal, including questionnaire development, fieldwork preparation, data collection and data documentation.

3.1 Questionnaire Development

At an initial stage, the challenge was to develop a questionnaire that fulfilled multiple criteria: it should measure core components of maternal well-being and associated risk factors during pregnancy (Murray et al., 2020); it should represent facets of the socio-ecological model of human development with measures that capture neighbourhood, family and individual characteristics; it should be cross-culturally valid while using measures that have been validated in prior research (Bullinger et al., 1993; Gjersing et al., 2010); and it should be developed in a consultative process that reflected the interests of all Consortium members.

To achieve these goals we went through a process of questionnaire construction that involved several stages (Rattray & Jones, 2007). The work began in December 2017, several months before the official project start. A final draft version in English was available in May 2018. Figure 5 provides an overview of the process.

Figure 5   Stages in the Questionnaire Development
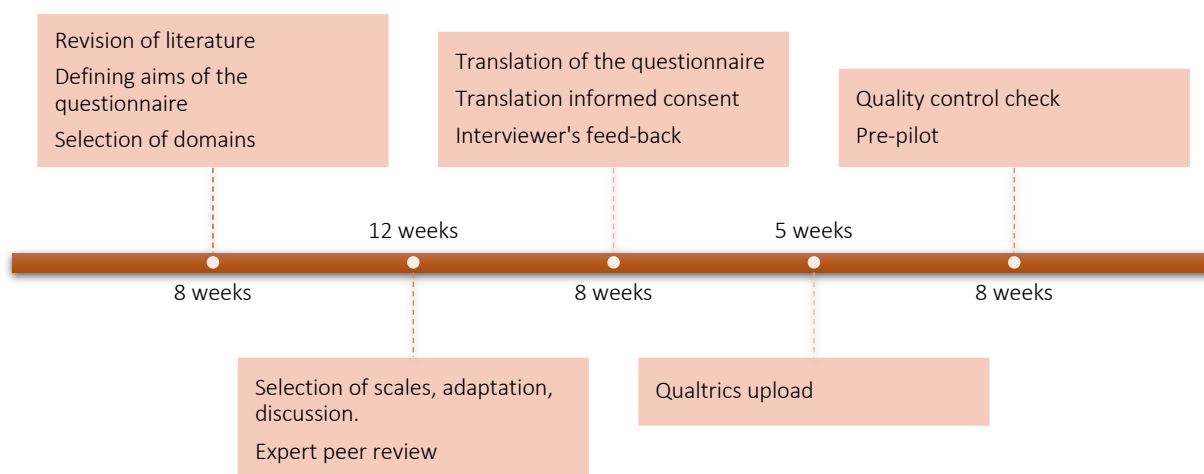
As a first step, we retrieved research reviews as well as data documentations of existing cohort studies and major, thematically relevant international cross-sectional studies. These included, for example, studies such as Young Lives (Barnett et al., 2013), the ALSPAC study (Fraser et al., 2013), The

Pelotas Longitudinal Studies, (Hallal et al., 2018), the Multi Indicator Cluster Surveys (MICS) (Akmatov, 2011), and the Demographic and Health Survey (DHS) (Devries et al., 2010).

On that basis, an initial list of thematic domains and possible constructs was shared among Consortium members for suggestions. Comments were compiled and distributed for further discussion, respectively for adopting instruments that were approved by the Consortium. This process was iterated five times until a final version of the questionnaire had been generated.

A prime concern was the comparability of measurement across the countries (Bullinger et al., 1993; Gjersing et al., 2010). Generally, the aim is to achieve full cross-cultural equivalence, which includes conceptual, semantic, item, operational, measurement and functional equivalence. However, such an approach requires an extensive iterative process of instrument development that was beyond the scope of this study (Herdman et al., 1998; Reichenheim & Moraes, 2007). We therefore prioritised measures that had been previously tested in international large-scale surveys such as those conducted by the World Health Organization (e.g., the Multi-Country Study on Women's Health and Life Events), UNICEF (the Multiple Indicator Cluster Surveys or MICS) and the Demographic and Health Study (DHS). Also, maintaining the planned length of about 40-60 minutes interview time was a major constraint. For this reason, we adopted short versions of several instruments. The final draft was submitted to three members of the Scientific Advisory Board (Prof. Terrie Moffitt, Prof. David Finkelhor, and Dr Alex Butchart) for approval.

Questionnaire's Translation

The EBLS questionnaires were first developed in English and then translated into nine languages. With small modifications, the EBLS protocol for the translation (Appendix 5) closely followed the guidelines suggested by the WHO (World Health Organization, 2009) and guidelines for the translation, adaptation and validation of instruments in cross-cultural health care research (Sousa & Rojjanasrirat, 2011). Questionnaires were independently translated into the target language by two translators who then met with an expert panel of the site team to examine differences and agree on the final translation. The translated versions were then piloted and, where necessary, subjected to minor modifications. Minor adjustments were made across the language versions to ensure that measures are relevant in each location (e.g., which ethnicities are recorded).

A simplified procedure was used for participant information materials and informed consent documents. The translation process (initial versions, recommendations, quality control check, changes) is documented in detail. Interviews were conducted in 11 languages, namely Afrikaans, British English, Jamaican English, IsiXhosa, Romanian, Sinhala, Tamil, Tagalog, Twi, Urdu and Vietnamese.

Table 2 describes the measures that were administered in the mother questionnaire, their sources, the number of items per measure and the assessment time point. While the baseline questionnaire encompasses 209 items, the follow-up questionnaire involves only 22 items. To allow for site-specific research interests, each site could add their own items of up to 10% of the total questionnaire length.

Table 3 provides an overview of the items of the father questionnaire, which was administered in Sri Lanka only. Interviews took approximately 40 minutes, involving the completion of a of a 90-item questionnaire at baseline. The follow-up assessment encompassed 37 items.

Table 2   EBLS Mother Questionnaire: Measures Administered at Baseline and Follow-Up

Measures	Sources	Nº Items	Assessment time point
Demographics	DHS (adapted)	27	Baseline
Prenatal Health	Adapted from: - The South Asian Birth Cohort (START) - Millennium Cohort Study (NatCen, 2003)	20	Baseline
Attitudes Towards Physical Punishment	Deater-Deckard, Lansford, Dodge, & Bates (2003)	5	Baseline
Community characteristics	Sampson, Raudenbush,& Earls (1997)	20	Baseline
Adverse Childhood Experiences	WHO 2009, International ACE-IQ Questionnaire (adapted)	19	Baseline
Intimate Partner Violence	WHO Multi-country Study on Women Health and Domestic Violence against Women (García-Moreno et al., 2005)	13	Baseline
Partner Supportiveness	Goldberg & Carlson (2014)	4	Baseline
Social support	Zimet, Dahlem, Zimet, & Farley (1988)	13	Baseline
Well-being	WHO (Five) Well-Being Index, Topp et al. (2015)	5	Baseline and follow-up
Depression (PHQ9)	Kroenke, Spitzer, & Williams (2001)	9	Baseline and follow-up
Suicidality	Osman et al. (2001)	1	Baseline
Perceived Stress Scale	Cohen, Kamarck & Mermelstein (1983)	10	Baseline
Aggression	The Brief Aggression Questionnaire Webster et al. {, 2014 #334}	12	Baseline
Adult ADHD symptoms	van de Glind et al. (2013)	6	Baseline
Self-control	Maloney et al. (2012)	8	Baseline
Substance Use	Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) – Adapted version WHO ASSIST Working Group (2002)	9	Baseline
Pregnancy-related Beliefs	Prenatal Attachment Inventory – Revised, Pallant et al. (2014)	18	Baseline
Newborn Health and Well-being	Norwegian Mother and Child Cohort Study (MoBa), Magnus et al (2006) Questionnaire for breastfeeding mothers Unicef/WHO (2009)	8	Follow-up
The Mother's Birth Memories	The Birth Memories and Recall Questionnaire, Foley et al. (2014)	5	Follow-up

Table 3 — EBLS Father Questionnaire: Measures Administered at Baseline and Follow-Up

Measures	Sources	Nº Items	Phase	Data collection strategy
Feelings about Fatherhood (prenatal)	Adapted from the Avon Longitudinal Study of Parents and Children, Scourfield et al. (2016)	13	Baseline	Paper and pencil
Fathers' Participation in Antenatal Care	Davis et al. (2016), Davis et al. (2018)	7	Baseline Follow-up	Paper and pencil
Fathers' Participation in Household Activities	Adapted from the Avon Longitudinal Study of Parents and Children, Scourfield et al. (2016)	8	Baseline Follow-up	Paper and pencil
Attitudes to Fatherhood	Avon Longitudinal Study of Parents and Children, Scourfield et al. (2016)	8	Follow-up	Paper and pencil
Paternal Enjoyment	Avon Longitudinal Study of Parents and Children, Scourfield et al. (2016)	5	Follow-up	Paper and pencil
Paternal Confidence	Avon Longitudinal Study of Parents and Children, Scourfield et al. (2016)	4	Follow-up	Paper and pencil
Activities with the Newborn Child	Avon Longitudinal Study of Parents and Children, Scourfield et al. (2016)	6	Follow-up	Paper and pencil

Note: The father questionnaire was administered in Sri Lanka only.

Creating Audio Files for Sensitive Questions

Most of the questionnaire was administered as an interviewer-led, computer-assisted personal interview (CAPI) supported by a tablet. However, additional considerations guided the sensitive sections on adverse childhood experiences and intimate partner violence. These sensitive questions were administered in a computer-aided self-completion (CASI) mode. We followed research that suggests that responses to sensitive questions are less likely to be biased if they can be answered in self-completion mode (Des Jarlais et al., 1999; Krumpal, 2013; Tourangeau & Yan, 2007). To facilitate self-completion for all participants, irrespective of reading skills, the site teams developed audio versions in all languages (A-CASI). The audio versions were fully integrated into Qualtrics and accompanied by explanations. Interviewees could choose to listen rather than read the questions and could tap on the screen to listen to their response options.

Quality Control and Pre-piloting

Before the translated items of the EBLS questionnaire were entered into the survey software Qualtrics, the Research Coordinators of each site conducted a final quality control to ensure the translated items had been correctly assigned to the original item in English. The last step was for each site to conduct a pre-pilot test of the questionnaire with a small number of volunteers per site. These tests mainly served to identify possible glitches in the questionnaire programming, and to double-check translations. A total of 84 pre-pilot interviews were conducted.

3.2   Planning the Fieldwork

Fieldworker's Manual and Fieldwork Coordinator's Training

A comprehensive fieldworker's manual and fieldwork coordinator's training is essential to achieve a high-quality data collection, consistency for the fieldwork across the study sites, and adherence to

ethical, health and safety requirements. The Romanian team (Prof. Adriana Baban, Dr Diana Taut and Dr Dorothea Ionescu) organised the international training and started work on the EBLS Fieldworker's Manual in October 2018. A final draft was completed in November 2018 in collaboration by the Cambridge team. Practical literature was consulted and fieldwork's manuals from prior studies were reviewed (Van Kammen & Stouthamer-Loeber, 1998).

The draft manual was the basis for the Fieldwork Coordinator's Training at Babes-Bolyai University in Cluj-Napoca, on 3-6 December 2018, which was jointly organised by the teams at Babes-Bolyai University and the University of Cambridge. Fieldwork Coordinators of seven sites were able to attend the training in person while one Fieldwork Coordinator participated via Zoom. Training sessions included the coordination and management tasks, recruitment of fieldworkers, sampling and recruitment of study participants, research ethics, questionnaire administration, using Qualtrics, as well as collecting, storing, and submitting biological samples. As the training progressed, participants provided feedback on issues that could further improve support for fieldworkers (e.g., steps for obtaining biological samples).

Based on this feedback, the collaborating team in South Africa (Dr Marguerite Marlow) developed the final 80-page Fieldworker's manual (Appendix). It comprises practical sections that guide the fieldworkers through all stages of the process. The manual covers recruitment, scheduling, informed consent, questionnaire administration, collection of biological samples, handling Qualtrics and the tablets, the management of difficult situations, as well as a safety and emergency protocol.

Data Management

Developing a reliable data management system that had the potential to be scaled up to a larger study was another challenge. An expert report by Cauane Blumenberg Silva, who coordinates the database management, scheduling, and data capture for established cohort studies in Pelotas, Brazil, explained the advantages of an integrated approach. In particular, the report suggested the electronic data capture system for research purposes, REDCap (Harris et al., 2009), as the most suitable solution. REDCap is widely used in similar large-scale studies with multiple data sources, and it comprises features that support the maintenance of personal data and the scheduling aspect, as well as the organisation of the interviews and data capture.

However, consultation with the University of Cambridge computing specialists revealed that the storage of personal data in Cambridge would require, under the new General Data Protection Framework (GDPR) framework, a so-called 'safe-haven' solution, which could not be realised within the time and financial constraints of EBLS-FR. Also, it was uncertain whether the computing services of the University of Cambridge could provide logistical support for such a project.

It was therefore decided to opt for a pragmatic approach with two separate databases. The first database comprised all personal identifiable data (address, name, contact details, contacting history, informed consent). These data would be kept in a safe location locally by each site teams and maintained through a local database management software. The second database comprised all de-personalised collected data. All components of the data capture were organised and programmed via Qualtrics, an online survey software that can be administered on tablets and allows different language layers. A unique ID linked the individual records across the databases. The system was piloted extensively before the beginning of the main data collection.

EBLS uses a number of technical and organisational measures to maintain security, confidentiality, completeness and integrity of the data associated with the study. This includes adherence to the

requirements on collection and processing of personal identifiable data as stipulated by the General Data Protection Regulation (GDPR) EU 2016/679.

Data Quality Control

Given the nature of a multi-county study (i.e., multiple teams in different cultural contexts), it was anticipated that a strong monitoring strategy would help to keep the fidelity to the research protocol and to make data comparable. The coordinating team observed adherence to the protocol on a weekly basis and discussed variations with local teams. For instance, the team monitored the correct assessment of the eligibility criteria, the recruitment strategies, data completion, correct use of ID labels, management of data and the administration of informed consents. Additional quality control measures were taken in some sites: In South Africa, for example, the project coordinator listened to the recorded assessments weekly to ensure that the informed consent was administered correctly to the participant, that questions were asked correctly, that answers were captured onto Qualtrics correctly, and that, in case of suicidal ideation, a referral was made.

Biological Samples

One important goal of the pilot study was to "test all stages of the collection, storage, and delivery of biological samples with the exception of the lab analyses" (EBLS proposal). Discussions among the Consortium members resulted in the selection of two types of biological samples for inclusion in the EBLS-FR, namely hair samples and dry blood spots. Expert advice was sought for the respective protocols and the fieldwork coordinator's training included sessions where the collection and storage were practised. Study participants provided a separate informed consent for the collection of biological samples, which were generally collected at the end of the interview. Medically qualified personnel or fieldworkers with pertinent training collected the dry blood spots.

Sampling and Recruitment Strategies

While we aimed to draw samples that broadly reflect the general population of pregnant women overall, strict representativeness was not deemed a critical goal for the Foundational Study. Also, practical constraints meant that study sites limited recruitment to a small number of primary health care facilities. Furthermore, some study sites focused on neighbourhoods or districts within the cities that were expected to be harder to reach or particularly exposed to violence and adversity.

Sampling and recruitment strategies in the study sites are described in Table 4. In most study sites the main sampling units were clinics that provide primary health care services and prenatal health checks. The main recruitment strategies included direct contact of women waiting for their health checks by the fieldworkers or initial contact by a health worker who would then refer interested participants to the fieldworker.

Table 4   Sampling and Recruitment Strategies

EBLS Site	Sampling Strategy	Recruitment Strategy
Jamaica	Participants were recruited from nine public health centres (PHCs), i.e. six District Health Centres, which provide services for 30,000-60,000 persons, and three Comprehensive Health Centres, which provide services for >60,000 persons in Kingston (for this study we included as Kingston the urban communities in Kingston and St. Andrew).	Within each PHC, midwives identified pregnant women in their third trimester based on records kept in a logbook. Research assistants approached pregnant women attending antenatal assessment. Women were contacted in order of appearance. The sampling process was completed once the 150 participants were reached.
Ghana	Two main public hospitals that serve Koforidua and the surrounding areas. All women resident in Koforidua and towns in the vicinity of Koforidua were eligible. The sampling did not include women who attended private clinics.	Recruitment took place through fieldworkers. Women waiting for their prenatal health checks at Koforidua Regional Hospital and the Koforidua Polyclinic were contacted.
South Africa	The recruitment of pregnant women took place through two local health care clinics and one public hospital. The sampled area mostly includes coloured and black communities of lower- and lower-middle-class backgrounds. A small portion of the sample were recruited through private medical practices, which included white community members of middle- and upper-middle class backgrounds.	Initially recruitment only took place through health care clinics and a public hospital. Fieldworkers would approach pregnant women in the waiting rooms and invite them to participate. However, due to low recruitment rates, door-to-door recruitment was introduced, consisting of fieldworkers recruiting participants within the targeted communities.
Romania	Recruitment of pregnant women took place through primary health facilities from all the neighbourhoods of Cluj Napoca. GPs from 84 medical offices were targeted, 16 agreed to collaborate. Additionally, one public obstetrics and gynaecology clinic and two private obstetrics and gynaecology clinics were included in the sampling.	In the primary health facilities, the general practitioners recruited from their records all the pregnant women in their third trimester of pregnancy. In both public and private obstetrics and gynaecology clinics, the medical stuff disseminated information about the study or the fieldworkers recruited directly the pregnant women who were doing their regular prenatal checks.
Pakistan	The sampling units included 34 Lady Health Workers' (LHWs) catchment areas in 12 localities of Tarlai called "Mohallas" in 8 wards, as well as the antenatal clinic at Rural Health Center (RHC) Tarlai. Each LHW's catchment comprises 200-250 households. Currently the LHW programme only has a partial reach in each ward. Around 6,000-6,500 out of 58,000 households in Tarlai are currently covered.	150 pregnant women in their third trimester were identified and contacted by 34 Lady Health Workers (LHW) in 12 out of 22 "Mohallas" of 8 wards. The Lady Health Visitor (LHV) at the antenatal clinic at RHC Tarlai also recruited eligible women for the study. Interviews were conducted at the health facility as well as LHWs' Health Houses within the community.
Sri Lanka	A non-probabilistic strategy that allows a consecutive selection of pregnant mothers was used. Women registered by Public Health Midwives (PHMs) covering urban areas within about 5km of the Teaching Hospital were recruited. The recruitment process was done in 5 out of 15 Medical Officer of Health (MOH) areas in the Gampaha District.	Potential participants were first approached by a research coordinator or fieldworkers of the EBLS team at the antenatal clinics run by the MOH office. Leaflets were distributed among all eligible participants and interested participants were registered. Appointments were given for the mothers (out of all registered eligible mothers) who were willing to participate to the EBLS study.
Vietnam	A convenience sampling method was employed to select participants from a list of pregnant women who were recruited via ward health centers during their standard antenatal care visits in each ward selected for this study. The geographical stratification was based on the list of wards in the two Southern and Northern parts of Hue city. From each region of Hue City, four wards were randomly selected.	The midwife of the ward health centre contacted the pregnant women at the third stage of pregnancy to recruit them into the study. This process was carried out in 8 out of 27 wards in Hue city, involving 150 pregnant women with gestational age greater or equal to 29 weeks, resident in Hue City for at least six months.
Philippines	Convenience sampling was done in public lying-in clinics located in 5 out of 33 barangays. The barangays that were included were recommended by the Valenzuela City's Health Office.	A list of eligible pregnant women was obtained from the staff in each lying-in clinic. Trained fieldworkers approached potential participants as they attended antenatal assessments at the clinic. The fieldworkers introduced the study to each potential participant and obtained informed consent.

Evidence for
Better Lives

Fathers' Interviews

Fathers play an important role in the growth and development of children across all ages (Sarkadi et al., 2008). However, very few birth cohort studies systematically collect information on fathers, therefore little is known about father engagement with the unborn child and in the first years of life in low- and middle-income societies. Learning more about the challenges of including fathers in a birth cohort study seemed highly desirable. However, we were also conscious of the organisational and ethical challenges of adding such a study component.

In one study site, namely Sri Lanka, the team elected to conduct interviews with fathers. An additional protocol, led by Prof. Asvini Fernando, Prof. A Pathmeswaran and Ms Deshani Chathurika, was developed to support fathers' interviews, and a separate ethics approval was sought. In this study site, all women who consented to participate in EBLS-FR were asked about the possibility of their husband or partner participating in the study. To be eligible, fathers needed to meet the following three criteria: i) being the father figure to the baby, although not necessarily the biological father; ii) being aged over 18 when signing the informed consent, and iii) having their main residence within the study's defined geographical area.

Husbands/partners expressing interest in the EBLS study were given more detailed information related to the study. The father was either interviewed immediately after consent on the premises of the EBL study site in a special room, or was given an appointment to visit the EBLS site. When both the woman and her husband/partner participated, the two were interviewed separately. Wherever feasible a trained male research assistant conducted the interview. The men were offered compensation for their time and travelling.

Data were collected using a paper and pencil questionnaire at two different time points. As in the case of pregnant women, the baseline assessment was completed during the third trimester of the woman's pregnancy. Fathers were initially contacted Interviews took approximately 40 minutes, involving the completion of a 90-item questionnaire. The follow-up assessment encompassed 37 items. A total of 108 fathers agreed to participate in the baseline assessment, i.e. 72% of the sample.

3.3   Fieldworker Assessments

During the baseline data collection, we gathered extensive information about the fieldwork and possible challenges. The aim was to identify issues quickly, and to develop strategies for the main EBLS study. This section provides a summary of the main findings. They are based on communications in EBLS meetings, emails with the site teams, and through the Fieldworkers' Evaluation Form. The Fieldworkers' Evaluation Form is a 13-item questionnaire that was completed after each interview. The questions covered topics such as interview disruptions, suitability of interview setting, safety issues, availability of required materials, rapport interviewee-interviewer, and perceptions about the interviewee's attitudes. Interviewers also recorded notes on further details of the interview.

Collecting and assessing this information is essential for any progression to a larger longitudinal study. In particular, studies have demonstrated that responses to questions on issues such as domestic violence against women are highly sensitive to aspects of the interview settings such as the presence of others, feeling comfortable and safe, trusting that confidentiality is respected, or feeling that the interviewer is interested (Ellsberg et al., 2001). Variation in interview setting factors between sites hence raises concerns about the validity and hence the comparability of the collected data.

Figure 6   Suitable Room for Baseline Interview

"The interview has been conducted in a suitable room (e.g. private and quiet)"
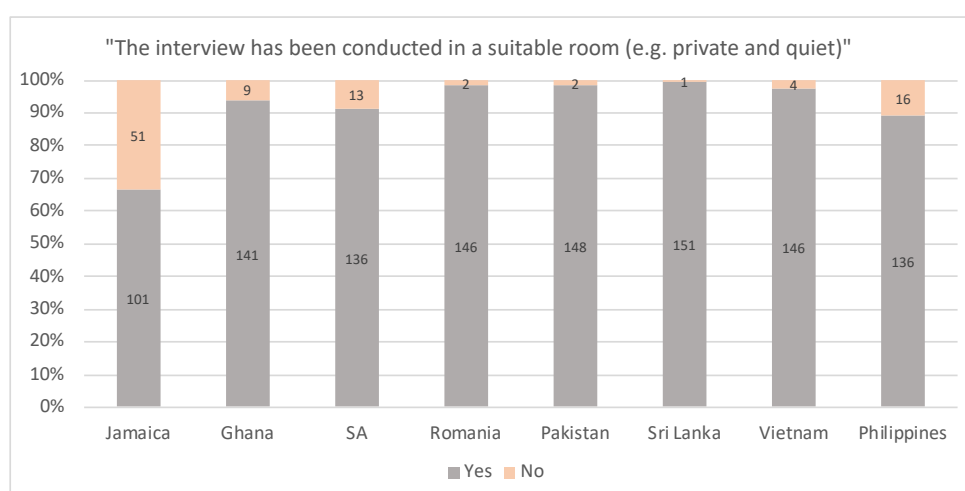
Figure 7   Interruptions during Baseline Interview

"We have been interrupted during the interview"
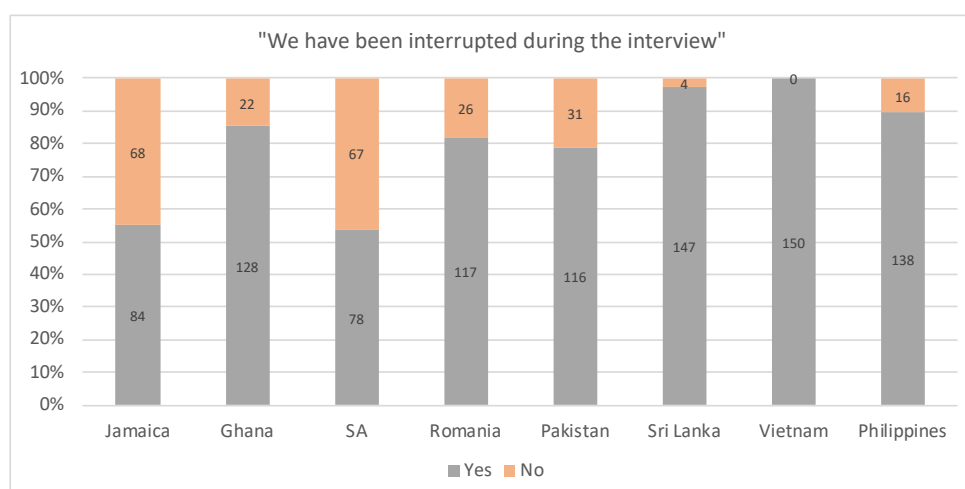
Interview Equipment and Settings

Interviewers were asked whether "all the required materials were ready and available for the interview (e.g., tablet, paper and pencil questionnaire if needed, etc.)". Issues were noted in 13 cases, i.e., 1.1% of all interviews, and were generally related to problems with the functioning of Qualtrics (e.g., account not installed, audio not functioning, answers lost when closing the app). Although these were rare occurrences, this suggests that Qualtrics may not be sufficiently reliable for complex multi-language interviews in the field.

Interviewers were also asked whether the interview could be conducted in a suitable room (i.e., private and quiet). Overall, 91.8% of interviews were conducted in circumstances that were deemed adequate (Figure 6). The lack of an appropriate space was an occasional challenge (8.2%), which may have generated discomfort in fieldworkers and participants. Jamaica was the site that reported most interviews conducted in a space that was considered less suitable, e.g. outside the house or in the car of the interviewer (33.6%). In the Philippines, limited space in the clinics meant that fieldworkers shared a room when conducting interviews, which made it difficult to keep the space quiet and private.

Figure 8   Difficulties Understanding the Questions
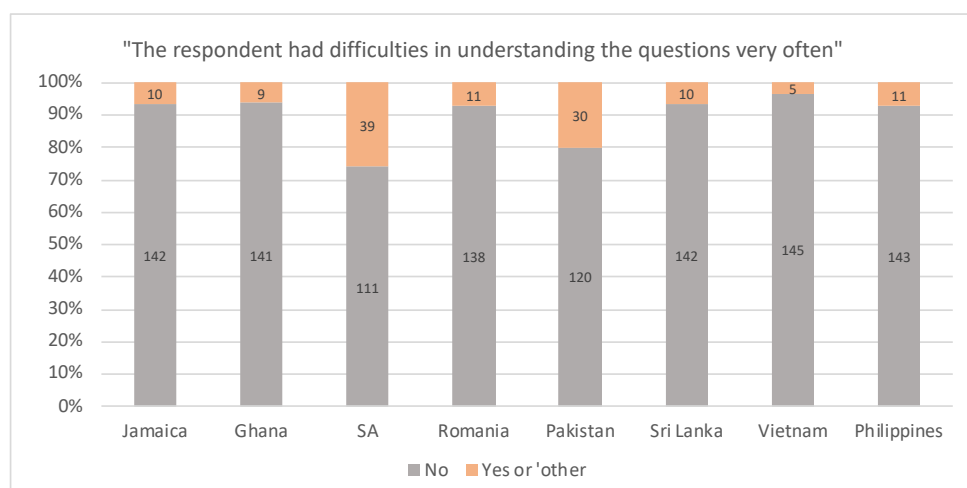
Figure 9   Participant Interest in the Study and the Interview
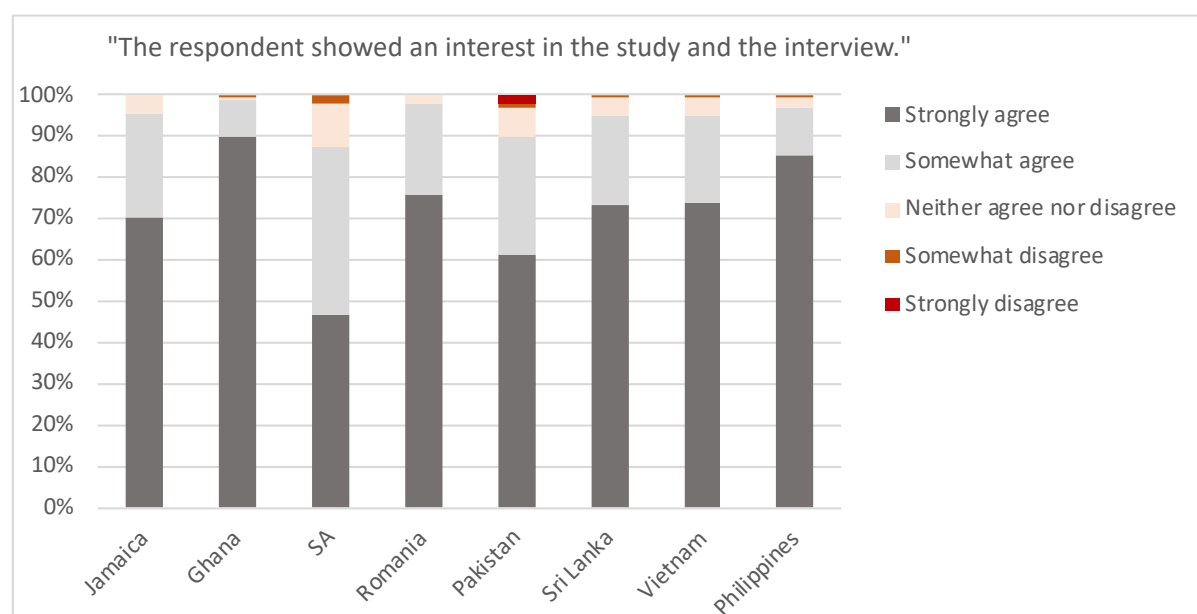
Interruptions during the interview were not uncommon. At baseline, interviewers registered some interruption in the Fieldworkers' Evaluation Form for 20.0% of all interviews (Figure 7). The largest number of interruptions occurred in Jamaica (68) and South Africa (67). Interruptions could be due to incoming messages or phone calls for the participant, noise or interruptions from family members, children that required attention, professionals sharing the work environment, and the respondent being called by the nurse or doctor to attend the medical check-up.

Participant Motivation and Concerns

Studies on attrition suggest that participant interest in research and engagement with the topic of a study are predictive of the chances that participants can be retained in a longitudinal study (Clark et al., 2020; Young et al., 2006). Interviewers therefore also assessed the interest of the participant in the study and the interview. Across all study sites, 94.4% of participants showed a strong or some interest in the study (Figure 9). There was some variation between study sites, with more participants showing

a limited interest in the Worcester (South Africa) and the Tarlai (Pakistan) sites. Additionally, interviewers were asked to assess whether participants articulated worries about confidentiality. Results show that, overall, 2.7% showed some worry about confidentiality, around the use of biological and sensitive data and the reasons for keeping personal data. Interviewer feedback suggests that the protocols and training prepared them well to address these concerns.

Travel to Interview Locations

Getting to the interview location could also pose challenges in some cases. Arranging interviewer's travel to the interview sites was a particular challenge in Ghana (Koforidua), South Africa (Worcester) and the Philippines (Valenzuela), where the study sites were at least two hours from the main University Campus of the partner team. Also, transport could be a challenge for the study participants. For example, the South Africa team provided transport for participants to the interview location as some were living in very rural areas, with the additional challenge of many participants not having a personal phone, which made contact very difficult. In Koforidua, Ghana, travel distances were also an issue.

Health and Safety

Health and safety of fieldworkers and participants was a major priority when planning the EBLS-FR, and we devoted a substantial amount of the fieldwork coordinator's training to these issues. Interviewers were asked whether they felt safe during the interview: 96.5% of the interviews were assessed as very safe and 2.7% were assessed as mostly safe. For 10 interviews, the interviewers said that they felt neither/nor, somewhat unsafe, or very unsafe. We examined each of these cases, reading through the interviewer's notes and re-contacting the fieldwork coordinators. With the possible exception of one situation in South Africa, it appears that all occurrences were related to situations where participants felt unwell during the interview, and the interviewer's response expressed their worry about the situation.

The team in Worcester, South Africa, reported that gang violence was flaring up in some of the areas where the interviews took place. Therefore, some potentially dangerous areas were avoided for interviews. Counselling was offered to fieldworkers by the site team.

In Sri Lanka and the Philippines, severe weather could make it difficult to arrange interviews, at times. In Pakistan, the team also had to carefully manage health and safety issues due to the Dengue fever outbreak in the second half of 2019, which felt unsafe for participants and fieldworkers.

Some sites faced various unexpected challenges. In South Africa, the EBLS team learned that a separate study recruited same-profile participants in the same area, resulting in low participation rates. The team adapted the recruitment strategy by including door-to-door recruitment. The Romania team also experienced some difficulties in the recruitment stage as they had to access participants via GPs. In Pakistan, Polio and other concomitant vaccination campaigns caused delays in recruitment as the community health workers were in charge of both the EBLS site recruitment and these crucial campaigns.

In Sri Lanka, the terrorist attacks on 21st April 2019 were a deep shock, and led to the declaration of a state of emergency, which made the recruitment almost impossible for some time. The team showed exceptional resilience in very difficult circumstances, and successfully managed to catch up with the planned number of participants.

The length of bureaucratic processes in some study sites affected timelines including the start of the fieldwork. For example, the team in the Philippines had issues obtaining the tablets needed to conduct the interviews, as they needed a total of 27 signatures to approve the purchase. This site also went through a long process for obtaining ethics approval. In Pakistan, the administrative side also caused some delays. In Romania, the follow-up interviews started later than expected due to delays in administrative paperwork. In Ghana, issues getting the insurance, which followed a more complex process compared to the other sites, delayed the start of data collection.

Unexpected changes in teams' personnel resulted in increased workload in some sites, such as in Sri Lanka during the follow-up, and in the Cambridge team due to the departure of the database manager before the start of the baseline.

3.4   Baseline and Follow-up Data Collection's Progress and Attrition

Delays with ethical approval was the main issue affecting the beginning of the baseline data collection, which varied between study sites. Figure 2 shows the cumulative number of completed interviews by week between February and July 2019. In Vietnam, data collection started in the week of 18th February 2019, while the team in the Philippines could not start before 22nd April 2019. Each site recruited and trained between two and eight fieldworkers for the data collection. The time required from the first to the last interview varied between 10 and 18 weeks, depending on the number of fieldworkers, holiday periods, and the complexity of gaining access to potential participants. In Sri Lanka, the data collection had to be interrupted for three weeks due to the Easter Bombings on 21st April 2019. Data collection was completed on 31st July 2019 with a total of 1,208 interviews.

Follow-Up Assessments

Follow-up assessments were planned to be scheduled when the child was aged 12-20 weeks. Interviewers re-contacted the study's participants and arranged for the interview to be conducted at an agreed location. The follow-up interview comprised 40 questions and was estimated to take around 20 minutes; 35% of the interviews were conducted at the home of the interviewee, 21% were conducted in a clinic, and the remaining were carried out in varying locations including, for example, the project office space, lady health worker houses and public spaces.

Table 3 shows summary statistics for follow-up assessments. There is some variation in the median date of the follow-up assessments ranging from late July in Vietnam to late November in Ghana. This variation reflects the variation in the date of the baseline interviews, but factors such as national holiday periods and availability of fieldworkers also played a role. On average, the follow-up assessments were conducted five months after the baseline interview, when the baby was 3.5 months of age.

However, there was also substantial variations in study sites. For example, at the time of the follow-up assessments 74.4% of children were at ages 10-22 weeks, 16.2% were below age 10 weeks and 9.4% were above age 22 weeks.

Figure 2   Baseline Data Collection: Weekly Progress of Completed Interviews, Feb-July 2019
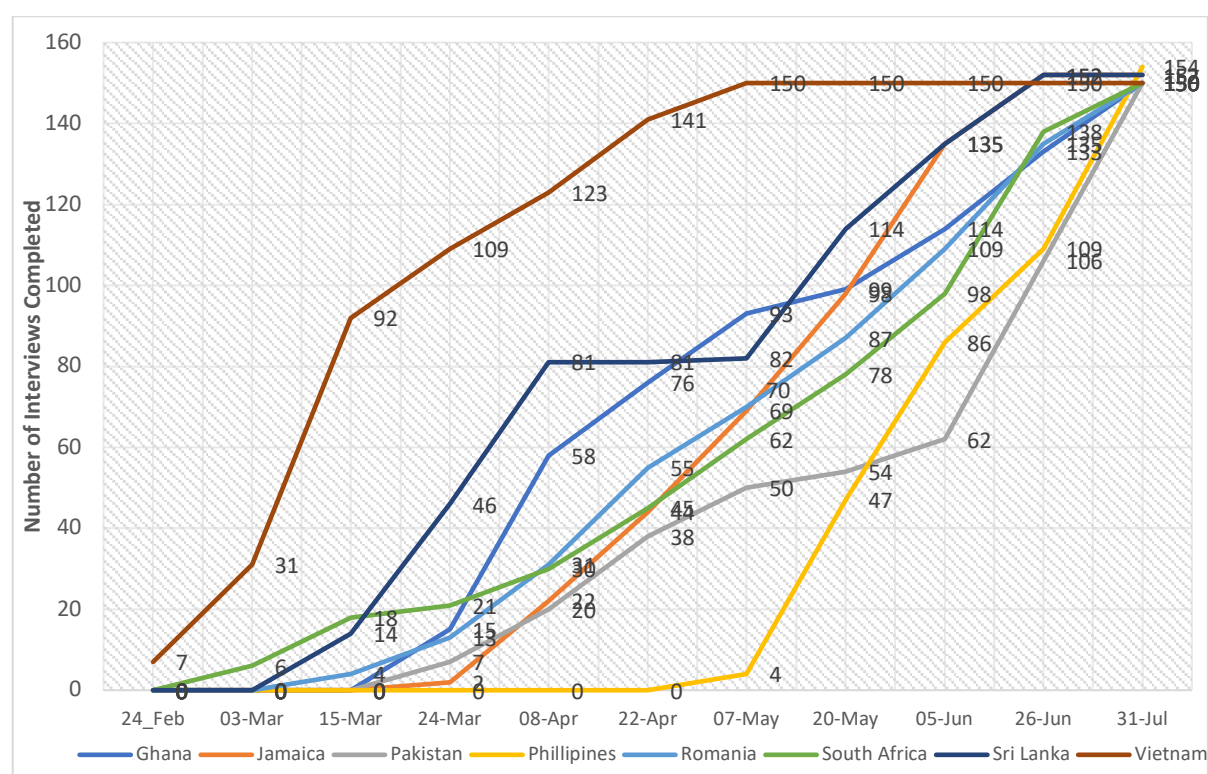
Table 3   Timing of Follow-Up Assessments

Country	Median Date Baseline Interview	Median Date Follow-up Assessment	Time from Baseline to follow-up (weeks)	Mean Age of Infant at Follow-up (in weeks)
Ghana	18-Apr-19	29-Nov-19	26.8	19.1
Jamaica	08-May-19	11-Sep-19	18.0	12.5
Pakistan	15-Jun-19	05-Nov-19	21.7	14.2
Philippines	30-May-19	02-Oct-19	17.0	10.8
Romania	10-May-19	14-Nov-19	26.8	20.8
South Africa	17-May-19	13-Sep-19	17.0	12.7
Sri Lanka	05-Apr-19	04-Sep-19	19.6	13.6
Vietnam	12-Mar-19	22-Jul-19	18.3	12.1
Total	09-May-19	02-Oct-19	20.3	14.2

Retention and Collection of Biological Samples

Table 4 provides an overview of key indicators of data collection success, namely the proportion of participants that could be contacted again for the brief assessment after giving birth and the proportion of participants that consented to provide hair samples or dry blood spots. Between 77% and 99% of participants in the baseline data collection could again be motivated to take part in the follow-up assessment (Average = 88%). Seven of the eight sites collected the samples as planned. In one site (Koforidua), ethical approval for the biological samples was delayed.

Table 4   *Overview of Data Collection Success, Follow-up Interviews, Hair Samples, and Dry Blood Spots*

	Baseline Interviews	Second Wave		Hair Samples		Dry Blood Spots	
	N	N	%	N	%	N	%
Koforidua	150	121	81%	11 [1]	7%	48[1]	32%
Kingston	152	143	94%	135	89%	131	86%
Tarlai	150	124	83%	105	70%	111	74%
Valenzuela	154	141	92%	124	81%	128	83%
Cluj-Napoca	150	115	77%	134	89%	133[2]	89%
Worcester	150	127	85%	103	69%	144	96%
Ragama	152	140	92%	136	89%	139	91%
Hue	150	148	99%	144	96%	147	98%
Total	1208	1060	88%	892	84%[3]	981	89%[3]

Notes:

1   In Koforidua the collection of biological samples could not be initially realised due to administrative delays linked to obtaining insurance coverage.

2   Note that the DBS samples for Cluj-Napoca were collected. However, due to a storage problem they are not available for analyses.

3   Excluding Koforidua.

Although the collection of biological samples was overall successful, some sites faced difficulties when collecting the samples. In South Africa and Ghana, for example, the short length and braided hair of many participants was a problem to obtain valid hair samples for the analysis. In several sites, participants articulated religious concerns about what would be done with the hair or blood samples. This was especially the case in Pakistan, but similar concerns were also raised in Ghana, Jamaica and South Africa. In many cases participants did not provide further details about their reasons for refusal.

In the seven sites that collected biological samples as planned, participant's consent for the hair samples ranged from 69% to 96% (Average = 84%) for the hair samples and 74% to 98% for the dry blood spots (Average = 89%). Therefore, only a subsample of study participants could be contacted for biological samples.

In three study sites (Cluj-Napoca, Tarlai and Hue) there were problems with the storage of the DBS samples, and the samples could not be used for further analyses. DBS samples from participants are available for analysis for Kingston, Valenzuela, Worcester, and Ragama.

In several study sites the shipment of the biological specimens was delayed by up to a year due to the COVID-19 pandemic. The hair samples are processed at the Forensic Hair Analytics Lab at the University of Zurich, Switzerland. The dry blood spots may be processed at the Laboratory for Human Biology Research at the Department of Anthropology, Northwestern University, USA. However, due to the long delays caused by COVID and the limited number of available samples (around 550) it is unclear whether further processing is warranted.

Data Cleaning, Scale Construction and Data Documentation

At the end of the data collection process, we proceed to prepare the final database. In concrete, all variables were explored, cleaned, and coded from alphanumeric to numeric. At the same time, open questions, responses in local languages were translated by the sites and coded using a standard metric. For instance, occupation was coded using ISCO scores, weight and height of the children converted into a single metric to allow fair comparisons.

Furthermore, despite having translated the EBLS questionnaire following the developed protocol based on the WHO guidelines, with the subsequent quality check and pre-pilot test, a few translation issues were spotted during and after fieldwork. In particular, the "coke" item in the Substance use section of the mother's baseline questionnaire, that some participants understood as "Coca-Cola", the drink, when it actually referred to the substance "cocaine". In the Urdu translation, we found evidence of a wrongly translated item in the baseline questionnaire after participants had already been interviewed, which resulted in two items with no validity in the Pakistan sample.

To homogenise the treatment of the data, we computed scales (mean scores, sum of scores) for measurements such as stress, depression, adverse childhood experiences, attitudes towards corporal punishment, among others. In all cases, scales were computed following the instruction of the authors.

The complete cleaned dataset was made available in December 2019. The sites had around six weeks to explore their data and check for potential mistakes. No significant corrections were added to the final version of the data.

We also developed a data dictionary that describes each measure (references, adaptations, etc.), explains how the scales were computed, and displays its reliability (Cronbach Alpha). This document is essential for paper writing and contributes to the consistency/transparency of measurement interpretation now and in the future. The document is available for all researchers using EBLS data.

3.5   Long-term Follow-up: Wave 3

In April 2020 members of the coordinating team started to consider whether there would be merit in a follow-up data collection of the EBLS sample during the COVID-19 pandemic. Five Consortium partners decided to join this follow-up study, namely Valenzuela, Hue, Cluj-Napoca, Koforidua and Kingston. The fieldwork has been jointly coordinated by an early career researcher at the University of Cluj-Napoca (Madalina Costin) and two early career researchers at the University of Cambridge (Laura Campo and Laura Katus). A group of early career researchers from all sites meets regularly to discuss progress and planned research. Ethical approval was obtained in all five sites as well as at the University of Cambridge, and an additional collaboration agreement was signed. The study sites in Hue and Valenzuela successfully applied for local funding, the fieldwork in Romania and Ghana is supported by contributions to fieldwork expenses from the University of Cambridge.

The long-term follow-up has two broader research goals: the first relates to examining the link between maternal exposure to adversity before the child was born and childhood development by the second year of life across the five sites. In particular, we aim to explore how adversity negatively affects maternal well-being, which we expect to affect child-mother relationship and child development (Bouvette-Turcot et al., 2020). The second goal will contribute to a better understanding of the effects of COVID-related restrictions on mothers and their young children (Yoshikawa et al., 2020). Evidence suggests that the stress, fears, and constraints linked to COVID exacerbate health inequalities of families. Vulnerable families may experience more strain and be less able to support their young children (Caparros-Gonzalez & Alderdice, 2020). The study aims to examine how variation across the study sites in the economic, social, and emotional stains linked to COVID-19 can lead to poor maternal and child well-being.

Table 5   *Instruments Administered in Wave 3 of EBLS-FR*

Domain	Source	Items	Repeat Measure
Basic Household Information	Shortened version	8 items	x
Partner Relationship Quality	Goldberg & Carlson (2014)	5 items	x
Social and Emotional Impact of COVID	(own development)	6 items	
Economic Impact of COVID	(own development)	7 items	
Mother's Health and Well-being in the family	(own development)	5 items	
Depressive Symptoms (GHQ)	Kroenke, Spitzer, & Williams (2001)	9 Items	x
Stress (PSS)	Cohen (1983)	10 Items	x
Social Behaviour Questionnaire (SBQ)	Baillargeon et al. (2007)	23 items	
Child-Mother Relationship (MORS)	Simkiss et al. (2013)	14 item	

The data collection is currently under way. The children will be around 20 to 24 months of age when the interviews take place. Participants will be contacted and interviewed with mobile telephones until face-to-face interviews can safely resume. Data collection comprises two main parts: a standardised questionnaire (see overview in

Table 5)and speech samples. Mothers will be asked to freely speak about their child for three minutes. The contents will be recorded and subsequently coded.

3.6   Lessons Learned

Data Management

In the Foundational Study, the data capture process ('data collection') was separated from the storage and management of the personal identifiable data and the scheduling process. This led to delays in data sharing and a lack of regular oversight over the process (the Cambridge Team did not have electronic access to data stored in sites). Also, Qualtrics was found to sometimes not be fully functional. A larger study would need to find an integrated solution with all data managed by one group and supported by a high-standard specialist software such as REDCap.

Comparability of Data Collection and Data Quality

Collecting comparable data while meeting the highest quality standards is a core goal of EBLS. The study protocols, the fieldwork coordinator's training, and the fieldworker's training laid the foundations for high-quality data collection. However, there was some variation between sites in how, for example, translation protocols were interpreted, and there was variation in interview settings. Such variation can bias data quality. A larger study would need more regular checks of adherence to jointly agreed protocols and further steps to optimise the comparability of data collection settings.

Time Planning and Scheduling

A large multisite birth cohort study requires iterations of fieldwork planning, training, and data collection processes within a strictly coordinated time schedule. The Foundational Study showed that local bureaucratic constraints, unanticipated personal events, natural and man-made disasters can slow down progress, with possible ripple effects on the entire collaboration. It would hence be important to account for possible contingencies in the time plan. At the same time, the coordination of the scheduling processes should be closely monitored.

Sampling

The present Foundational Study yielded valuable information about the feasibility of realizing representative samples in a larger study. It showed that sampling based on pregnant women presenting in public and private antenatal health clinics in the third trimester of pregnancy is a feasible approach.

Attrition and Incentives

The realisation of a second wave of data collection yielded valuable data on attrition. Given the limited resources and time, the attrition rate of 12% across the sites is good but would be a serious problem as a basis for a long-term representative study because vulnerable populations might be increasingly lost as the study progresses. For a larger study additional efforts would need to be planned and costed to maintain a high participation rate over several years. Recent reviews provide valuable information about the most effective ways to minimise attrition, but these would need to be adapted to meet local needs and conditions.

Biosamples

The collection of biological samples requires the support of nurses and health workers. It would be essential to budget for training and compensation of their time. Also, additional training and safeguards would be needed to make sure that all samples are handled, stored, and shipped safely at all times.

4 Capacity Development and Policy Impact

Capacity development and impact are a vital part of the EBLS. The notion of capacity building has historically been linked, in the global development discourse, to the idea of technical assistance that enables the recipients of training to solve problems independently (Eade, 2007). However, capacity development is a multi-layered process, which should not be seen as limited to technical training programmes (Bates et al., 2006; Cooke, 2005). Rather, it also entails the notion of a dialogue among equals whereby partners learn from each other in order to jointly build the capacity to solve problems (Eade, 2007).

Capacity development and policy impact are sometimes conceptualised as two different areas of research-related goals. However, in studies like EBLS the two goals often converge, and impact is probably best understood as a result of capacity development, which can be seen as any activity that increases an institution's ability to recognise and solve problems (Eade, 2007). In this sense, the World Health Organization defines capacity building in the context of public health as "the development of knowledge, skills, commitment, structures, systems, and leadership to enable effective health promotion" (Bergeron et al., 2017; Smith et al., 2006). This reinforces the idea that in a large collaborative project like EBLS, capacity in the sense of a shared pool of skills, knowledge and structures that support health promotion and prevention goals also grows as a consequence of the emergence of a community of practice through continued collaborative work.

The EBLS-FR has been a great opportunity to develop and test a range of approaches to capacity development and impact. The present section summarises four main groups of activities, namely dissemination and public engagement, efforts to build the academic capacity of the Consortium as a community of practice, the early career network, the needs and resources assessment and its contributions to policy impact.

4.1 Dissemination and Public Engagement

A first group of activities that the Consortium developed revolves around dissemination and public engagement. Table 6 provides an overview of the main types of activities since the beginning of the project supported by the Fondation Botnar.

We used several strategies to share information about the EBLS initiative with a wider general public and specialists. The EBLS concept note provides a summary of the project. It was first developed in 2016 and has been continuously updated to reflect the development of the study. Two short videos that present the EBLS study to a wider audience and policymakers were produced in 2019. The Consortium also shares information and updates about the EBLS project through web pages (https://www.vrc.crim.cam.ac.uk/vrcresearch/EBLS). These pages offer summaries of all aspects of EBLS, as well as links to conferences and workshops, including videos of talks.

Members of the Consortium also convened workshops and symposia. Each participating site organised at least one workshop where local or national policy-makers and stakeholders were invited to discuss the study's findings and their implications. Also, site visits were generally used to jointly present the project to groups of students, philanthropies, heads of university departments, policy

representatives and stakeholders. The coordinating group at the University of Cambridge organised two symposia on EBLS and a public conference on birth cohort studies.

Members of the Consortium presented EBLS at national and international conferences, often responding to invitations to speak about the project. These include, for example, talks on EBLS at the Scottish Association for the Study of Offending (2019), the Asian Health Literacy Association Conference (11-12 Nov 2019) and the WHO Implementing INSPIRE conference in Kampala (24-25 June 2019). In particular, several members of EBLS (e.g. Prof. Bernadette Madrid) regularly engage with the INSPIRE collaboration to end violence against children. Prof. Eisner is a member of the INSPIRE Working Group and has been actively engaging in contributing to the WHO's violence prevention agenda throughout the development of EBLS.

Table 6   Dissemination and Public Engagement Activities

What	Target Audience
EBLS Concept Note (first version 2016, continuously updated)	International agencies, academic partners, national and local stakeholders, potential funders.
EBLS Videoclips (2018) Two 5-minute professional video-clips.	General public, policymakers, international agencies, national and local stakeholders.
EBLS Website https://www.vrc.crim.cam.ac.uk/vrcresearch/EBLS Regularly updated; sections on publications, study sites, workshops and symposia, research findings and videos	General public, potential funders, local stakeholders, policymakers, academics and violence-prevention organisations..
Policy and Stakeholder Events, Workshops, Symposia Events organised by Consortium members to share and discuss EBLS findings and engage with stakeholders at various levels	International agencies, local and national stakeholders, academic partners.
Presentations at conferences and workshops Showcasing study and sharing findings at practitioner-oriented conferences	International agencies, academic partners working on SDG-related topics, practitioners, national and local stakeholders.

4.2   Academic Capacity Development

Over the past three years, the Consortium has created shared resources and research infrastructures that can support its research capacity. Jointly achieved outcomes include, for example, developing a questionnaire with a shared theoretical framework, coordinating the ethical approval process, training the fieldworkers and the fieldwork coordinators, conducting the translation of instruments to WHO standards, and realising joint academic output at different levels. Different members took the lead on various tasks. For example, Prof. Catherine Ward at the University of Cape Town played a decisive role in developing the terms of reference and the publication policy document; the teams in Stellenbosch and in Cluj-Napoca jointly developed the fieldworker's training manual; members of the Vietnam team took the lead in developing the protocol for the Needs and Resources assessment; three teams (Sri Lanka, Philippines, Romania) developed the fathers' interview questionnaires; and the group led by Dr Aja Murray in Edinburgh contributed technical expertise on issues like statistical modelling and collecting biological data.

Furthermore, the Foundational Study also entailed a substantial contribution to training and academic development. Overall, 15 research and fieldwork coordinators and data managers were trained in managing various aspects of the data collection process and supervising fieldworkers.

Table 7   Academic Capacity Development as Part of the EBLS-FS

Type of academic capacity	Beneficiaries
MPhil	Deshani Chathurika, Sri Lanka
Master's Theses	*Fahad Abasi,* Health Services Academy, Pakistan
	Yasmeen Anwer, Health Services Academy, Pakistan
PhD theses	*Huyen Phuc Do,* Queensland University of Technology
	Madalina Costin, Babes-Boljan University, Cluj-Napoca
	Chad Hemady, University of Edinburgh, UK
Postdoctoral Work	*Dr Laura Katus,* University of Cambridge, UK
	Dr Ruth Brown, University of Edinburgh, UK
Co-authorship in research output	15 senior academics
	20 junior academics and early career researchers[2]
Fieldworker's Training and Fieldwork	25 fieldworkers
Experience, Fieldwork Coordinators and Data Managers	14 fieldwork coordinators and data managers

Note: See Appendix 11 for detailed list of collaborators and fieldworkers.

Twenty-five fieldworkers were trained in how to comply with study protocols, contact participants, conduct standardised interviews on sensitive topics and manage issues relating to research ethics and health and safety. Members of the early career researchers' network received training in conducting and coordinating standardised interviews, questionnaire translation, managing sensitive data and collecting biological samples. Seven members of the early career network have used EBLS data for their own research projects, and to date one PhD thesis has been completed entirely based on EBLS (Huyen Do, Vietnam).

4.3 The Early Career Network

In June 2018 we initiated the EBLS Early Career Network, led by Prof. Michael Dunne. The creation of this network responded to the need of strengthening the research capacity in lower- and middle-income countries (LMICs) relating to violence against children, child mental and physical well-being, and effective prevention (Dean et al., 2017). Senior academics in each partner university nominated research staff, postdoctoral fellows, PhD and Master's students for participation in the network. The EBLS Early Career Network includes researchers from all EBLS collaborating universities. Information on the current network members can be found at https://www.vrc.crim.cam.ac.uk/files/ebls-ecrn-2021.pdf.

Early career researchers played an essential role in the realisation of the Foundational Study. This includes the development of technical documents such as the protocol and the fieldworker's manual, the coordination of the translations, the coordination of the data collection, and quality checks at all stages. Furthermore, early career researchers contributed to the needs and resources assessments and the writing of the research syntheses.

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[2] Deshani Chathurika (SLK), Shobhavi Randeny (SLK), Diana Taut (ROM), Huyen Phuc Do (VTN), Bao Yen Luong Thanh (VTN), Lan Hoang Nguyen (VTN), Bach XuanTran (VTN), Tuyen Dinh Hoang (VTN), Linda Murray (NZL), Yasmeen Anwer (PAK), Fahad Abbasi (PAK), Ariba Dar (PAK), Abdullah Hafeez (PAK), Chad Lance Hemady (UK-EDin), Ruth Brown (UK-EDin), Sarah Foley (UK-Cam), Yulia Shenderovich (UK-Cam), Sara Valdebenito (UK-Cam), Xanthe Hunt (ZA), Stephanie Du Toit (ZA), Marguerite Marlow (ZA).

Evidence for Better Lives

Table 8   *Early Career Network's Workshops*

Data	Presenter	Workshop title
04-Mar-21	Huyen Phuc Do	Overview of EBLS dataset and methodological considerations for academic publications
18-Mar-21	Klea Ramaj	Researching domestic violence, maternal well-being, and child development in LMICs
18-Mar-21	Prof. Manuel Eisner	Understanding attrition: an introduction to logistic regression using EBLS
01-Apr-21	Yasmeen Anwer	Feasibility of a Birth Cohort in Pakistan - Evidence for Better Lives Study
15-Apr-21	Dr Sara Valdebenito	Understanding and working with EBLS data
29-Apr-21	Dr Siham Sikander	Assessing the effectiveness of psychosocial interventions for pregnant women, mothers and their children
13-May-21	Prof. Joseph Osafo	Collecting and analysing qualitative data on sensitive topics
27-May-21	Prof. Manuel Eisner	Reflecting on the EBLS Study while writing the Final Report
10-Jun-21	Dr Aja Murray	Writing for publication
24-Jun-21	Dr Sarah Foley	An introduction to measurement invariance

During COVID-related lockdowns we developed bi-weekly training workshops for early career researchers. These sessions have included training in quantitative and qualitative research methods, writing skills, and teaching on core topics of EBLS such as maternal depression, neighbourhood disorganisation and child well-being (see Table 8). Early career researchers also presented research findings. The topics of the workshops were based on information provided by network members through a mentoring form. This form was designed to learn what competencies and skills members were willing to strengthen and to share with the rest of the group. The mentoring forms can be used for matching members in the network for mentoring purposes in the future.

Furthermore, we have initiated writing groups for at least two research publications led by teams of early career researchers.

4.4   The Needs and Resources Assessment

The terms of reference discussed at the EBLS conference on 7-9 August 2017 included a needs and resources assessment (NaRA) as one of the planned work packages. The plan was to conduct a "needs and resources assessment relating to current provision concerning to maternal mental and physical health, domestic violence prevention, parenting advice and training, child maltreatment, and early childhood cognitive stimulation […] to initiate and inform the planned policy impact strategy." The proposal submitted to Fondation Botnar specified that each study site would "map out current provision to address intimate partner violence and violence against children through a needs and resources assessment" (Proposal Text, 2017).

In general, needs and resources assessments are systematic studies that collect and analyse information on the gap between the current resources in a system to achieve a specific goal and the needs that must be met to achieve that goal (Goodman & Sanders Thompson, 2017; Lavery, 2018). In the EBLS study we specifically aimed to: a) provide an overview of the main resources in respect of policies, programmes and agencies in each city; b) map out, in each site, major gaps and challenges that limit the ability to address violence against children (VAC) more effectively; c) identify priorities that may become a basis for future policy development; d) develop a possible framework for monitoring city-wide policy change across all study sites in the future. Moreover, one important goal was to engage with potential users at early stages to better understand the needs that research findings

may help to address (Sebba, 2007). The results were published in the report 'Addressing Violence against Children: Mapping the Needs and Resources in Eight Cities across the World' (Appendix). Copies of the report were sent to academics and international organisations in early 2020?

Methodology

To achieve the goals of the NaRA, early career researcher Huyen Phuc Do and Prof. Michael Dunne developed a detailed protocol (Appendix 9). It was finalised in early September 2018 after consultation and feedback by all Consortium members as well as valuable input by Dr Lauren Rumble, Principal Advisor for Gender Equality at UNICEF. The protocol comprised a four-step procedure, which was later extended into an eight-step needs and resources assessment model drawing on existing models of needs assessments (Evidence for Better Lives Consortium, 2019).

The data collection had two components. The first component was a desk review of published and grey literature in each study site. This comprised academic publications as well as legislation, reports by international organisations and governmental agencies, website pages by public or private sector agencies, and other technical reports documenting the existing resources to address risks of VAC and intimate partner violence (IPV). The second component was semi-structured interviews with 56 key expert informants from the eight sites, including government officials, representatives from non-governmental organisations, policy planners and policy implementers. The interviews allowed for clarifications of findings obtained via the desk review. In addition, they provided more in-depth descriptions of the needs, resources and challenges for prevention of violence in the EBLS cities.

Across all stages, we adopted an analytic perspective informed by the 'INSPIRE – seven strategies to end violence against children'- framework (World Health Organization, 2016). INSPIRE is currently the most influential and comprehensive international policy framework for addressing violence against children. It was jointly developed by 10 international agencies including the WHO, UNICEF, UNODC and the World Bank. At its core, *INSPIRE* comprises seven evidence-based strategies designed to help local and national governments to achieve the SDGs related to ending violence against children (Figure 10) It also includes a practical implementation framework for decision-makers, stakeholders and practitioners (World Health Organization, 2016).

For the NaRA, the INSPIRE framework provided a widely respected set of standards for evaluating evidence-based prevention of violence against children, a tool for comparing findings across the study sites, and a way to link the work conducted in EBLS with the global discourse led by WHO, UNICEF, and the End Violence Partnership. In June 2021, the Inspire website uploaded a copy of the 'Addressing Violence against Children: Mapping the Needs and Resources in Eight Cities across the World' report (https://www.inspire-strategies.org/addressing-violence-against-children-mapping-needs-and-resources-eight-cities-across-world).

Figure 10   The WHO Inspire Framework - see (Evidence for Better Lives Consortium, 2019)

IMPLEMENTATION AND ENFORCEMENT OF LAW

This strategy targets the legal system to prevent violent behaviours and hold perpetrators to account. It also targets laws aimed at reducing the factors that can trigger victimisation or perpetration of violence. This includes laws banning corporal punishment at home and in schools, laws oriented to reduce the excessive use of alcohol and laws that limit youths' access to weapons. Justice and law enforcement systems play an important role here.

NORMS AND VALUES

This strategy focuses on strengthening norms and values that support non-violent, gender-equitable relationships to reduce the acceptance of VAC and women. This can include sensitisation campaigns, often supported by mass media. It can also comprise interventions to accelerate the enactment of laws and policies to reduce IPV, as well as promote the reporting of violent incidents in households.

SAFE ENVIRONMENTS

Creating and sustaining safe streets, and other physical environments where children can spend time free of violence are crucial steps. Safe environments involve public spaces, but also other institutional areas such as orphanages, police stations and alternative care facilities aimed at protecting at-risk and vulnerable children.

PARENT AND CAREGIVER SUPPORT

This aims to reduce harsh parenting practices and to support families, parents or caregivers in learning positive and supportive child-rearing skills. This can include group-based skills training for parents, parenting support delivered through home visits, tip sheets or helplines for parents of children with challenging behaviours. Parenting and caregiver support is generally provided by the social welfare and health sectors.

INCOME AND ECONOMIC STRENGTHENING

Research shows that improving families' financial security and stability can contribute to reducing child maltreatment and IPV. In the context of INSPIRE, some of the proposed approaches involve cash transfers, including those that integrate gender equality training and loans.

RESPONSE AND SUPPORT SERVICES

Improving access to good quality health, social welfare and criminal justice services can reduce the impact of violence. This includes medical care for injuries, legal assistance and counselling for those who have been victims of crime.

EDUCATION AND LIFE SKILLS

This strategy aims to improve access to gender-equitable education, social-emotional learning and life-skills programmes in safe school environments. Examples include ensuring enrolment/attendance for both boys and girls and skills training for non-violent conflict resolution.

Data Analysis and Synthesis

The desk-reviews, expert interviews and site reports were carried out mainly by members of the EBLS Early Career Network, coordinated by the team at the University of Cambridge. Results of the desk review and the expert interviews were first synthesised into site reports. A draft version of the local NaRA reports was discussed at the EBLS Stakeholders Summit held in Manila, the Philippines, in November 2018. The site reports were then further refined and combined with initial findings of the baseline survey, leading to the report 'Addressing Violence against Children: Mapping the Needs and Resources in Eight Cities across the World' (Evidence for Better Lives Consortium, 2019). Its central element are syntheses of the collected information in summary tables that score the resources and strengths, the gaps and challenges, and the recommendations for each city, based on the INSPIRE framework.

The data analysis involved three steps. First, the themes mentioned in the sections on strengths and resources, challenges and gaps, and key recommendations were listed, simplified and organised by INSPIRE categories. Then, each EBLS site team scored each theme by priority and the assessment based on expert interviews and the desk review. Lastly, interpretation used a colour-coding scheme and descending theme order based on overall level of endorsement across all eight sites, computed as a sum score. For example, Table 9 reproduces the table that summarises the findings regarding gaps and challenges for each of the INSPIRE framework domains.

Table 9   Example of Results Synthesis - "Gaps and Challenges - INSPIRE Themes"

	Challenges and gaps	Kingston (Jamaica)	Koforidua (Ghana)	Worcester (South Africa)	Cluj-Napoca (Romania)	Tarlai (Pakistan)	Ragama (Sri Lanka)	Hue (Vietnam)	Valenzuela (Philippines)
Implementation and Enforcement of Laws	Insufficient and partial implementation of laws	3	3	3	3	3	3	2	2
	Low awareness of laws and rights among vulnerable groups	2	3	2	3	3	3	3	1
Norms and Values	Limited ability to address cultural acceptance of harmful norms	3	3	2	2	3	3	2	3
	Lacking ability to overcome cultural barriers to disclosing VAC or IPV to support services	2	1	2	1	3	2	2	2
Safe Environments	Lacking structured after-school activities	2	3	3	2	1	2	3	1
	Few child-friendly protected areas	2	2	2	1	2	2	3	1
Parent and Caregiver Support	Lacking age-graded parenting support system with universal, selective and indicated layers	3	2	3	3	2	3	2	3
	Lacking training of health workers in non-harmful approaches to parenting	2	2	2	2	3	2	3	2
Income Strengthening	Lacking income strengthening programmes for vulnerable families	2	2	2	2	2	2	2	2
	Lacking microfinance programmes combined with gender equity training	2	2	2	0	2	2	3	1
Response and Support services	High barriers to accessing services, long waiting lists, overburdened child protection system	3	3	3	3	1	1	1	0
	Lack of specialist shelters for victims of abuse	3	3	2	2	2	0	3	0
	Lacking screening instruments	1	3	1	2	2	3	2	0
	Lacking case management and referral protocols	1	3	2	1	3	0	2	1
Education and Life Skills	Lacking programmes for teachers and education personnel to life skills in the school system	2	2	2	2	3	2	2	3
	Lacking approaches to addressing violence on social media and the internet	1	2	1	2	2	3	3	3
	Limited life skills support and quality control in early childcare and preschool systems	2	2	2	2	2	2	3	3

Note:
3   A critical challenge/gap that needs to be addressed as a priority (select not more than a maximum of 10 fields)
2   An important challenge/gap that should have some priority.
1   A less important challenge in this context/site.
0   Not a gap/challenge in this site, not relevant.

Source: Evidence for Better Lives Consortium (2019: 46)

Our approach offers a rapid and relatively low-cost qualitative method that has been adopted for the Global Partnership to End of Violence Against Children.[3] It will help different countries around the world to create a baseline of a shared understanding of what is required to effectively implement different strategies and ensure that the end goal of reducing violence is feasible.

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[3] https://www.end-violence.org/sites/default/files/paragraphs/download/INSPIRE%20Mapping%20Fact%20Sheet%20april%202020.pdf

Members of the EBLS Consortium have engaged with local stakeholders and decision makers in all EBLS cities. However, the city of Valenzuela in the Philippines stands out as a particularly good example of how EBLS, along with many other factors, could contribute to policy change. Despite the disruptions imposed by COVID-19, the city council of Valenzuela is in the process of adopting a comprehensive child protection policy, the first such policy in the Philippines. It also has become one of the Pathfinder Cities of the End Violence Global Partnership and is planning to conduct a large violence against children survey (VACS) in collaboration with UNICEF, the Philippines Council for the Welfare of Children and the Consuelo Foundation.

Valenzuela City has also organised a Pathfinding Data & Evidence Group (PDG) composed of sectors and organisations involved in collecting, monitoring, and utilising data on vulnerable children. Its members include representatives from service providers, local government offices and national government agencies involved in health, social welfare, legal, education, planning information and communication services. The PDG helps the city's government and Pathfinding partners manage, share and use data and evidence collected from the city-wide prevention approach to inform policy decisions and enhance practice and responses to VAC.

Furthermore, it is piloting a social-media based version of the Parenting for Life-Long Health (PLH) programme. Parenting for Life-Long- Health is a pioneering suite of parenting interventions that were developed as an open-source resource by WHO, Stellenbosch University and the University of Cape Town in South Africa, the universities of Oxford, Bangor and Reading in the United Kingdom, and UNICEF (https://www.who.int/teams/social-determinants-of-health/parenting-for-lifelong-health) (Alampay et al., 2018). In short, Valenzuela is in the process of becoming a pioneer city, where the local government and other stakeholders collaborate to pilot evidence-based programmes, document best practices and establish monitoring and evaluation systems anchored in SDG indicators.

Valenzuela will also realise a Baseline Survey on Violence against Children. In line with the Philippine Plan of Action to End Violence against Children and the Pathfinding City initiative, this first city-level adaptation of the National Baseline Survey on VAC will provide data on the prevalence, causes and consequences of child maltreatment in the city that can be used by the health, social, legal departments and other concerned agencies to help design and plan strategies, at the same time will provide a means to track and evaluate the impact of prevention efforts in the city.

EBLS played a key role in these developments. The co-PI of EBLS from the Philippines, Dr Bernadette Madrid, is the Director of the Child Protection Unit at the University of the Philippines, executive director of the Child Protection Network in the Philippines, a key advocate for Child Protection, and the organiser of the annual *Ako Para sa Bata* ("I am for the Child") conferences, which bring together several thousands of child-protection practitioners from across the Philippines.

Bernadette Madrid proposed Valenzuela as a study site for EBLS because she was confident that the municipality was committed to addressing violence against children and interested in an evidence-based approach. During the site visit in 2016 she therefore arranged meetings between the PI of EBLS, Manuel Eisner, and a range of local stakeholders where we explained the notion of Pathfinder Cities. In 2018, we jointly took the initiative to invite all EBLS co-PIs, one policy stakeholder per site, as well as representatives of WHO and the End Violence partnership, to the 11th *Ako Para sa Bata* conference. Additionally, we organised, with the support of the Consuelo Zobel Alger Foundation, a separate Researchers' and Policymakers' Dialogue where initial findings from the NaRA report were presented and discussed for the first time. The conference was organised around the INSPIRE framework. Keynote

talks were given by Alex Butchart (WHO, Violence & Injury Prevention), Manuel Eisner and the Mayor of Valenzuela Rexlon T. Gatchalian. Importantly, the conference also served as the background for meetings and discussions between local stakeholders and leading representatives of the End Violence Partnership, especially Dr Mary Catherine Maternowska, who successfully proposed a long-term collaboration between End Violence and the city council of Valenzuela to advance child protection.

4.5   Lessons Learned

Over the past three years, the EBLS-FR has realised, in addition to accomplishing the pilot study, a portfolio of public engagement and policy impact activities and developed an active capacity development policy. The structures would constitute a valuable basis for a long-term collaboration that links research excellence, policy impact and capacity development. Several important lessons have been learned.

Early Career Network

The Early Career Network seminar series launched in 2021 has been a big success. Also, several collaboration and informal mentoring arrangements among early career researchers have been built, and early career researchers have made exceptionally valuable contributions to research output. In a future larger study, the training of early career scholars and students engaged with EBLS should be prioritised as a core project component that is provided from the start. Regular online workshops with participation from all study sites would be critical. Also, it would be important to plan a limited number of visiting scholarships that would allow early career researchers to collaborate with colleagues in other sites on publication and research projects.

Policy Impact

As a foundational study, EBLS has achieved some substantial policy impact, both internationally and in some study sites. This is to a large extent thanks to Consortium members who have a strong experience in and commitment to policy engagement in their countries. Additionally, the support by international organisations such as WHO, UNICEF and UNODC is invaluable for contributing to the global agenda around child and family well-being. This strategy could be further strengthened with a possible intervention component. Also, we note that sustained policy engagement would need to be planned and costed in a way that is commensurate with the goals.

5 Pilot Study: Initial Results

Pilot studies are generally seen as a preparatory stage on the way to a larger study, but they rarely generate primary data that are sufficient for publication in quality academic journals (Doody & Doody, 2015). In contrast, the EBLS Foundational Study is beginning to establish itself as a contribution to knowledge in its own right. In particular, members initiated publications that review the evidence and contribute to building the field for the planned main study. We also expanded the scope of data collection. This includes a wider range of baseline measures, the post-birth assessment in all study sites, the (ongoing) extraction of biological stress markers in the blood and hair samples, and the (ongoing) third wave of data collection in five sites that will cover the COVID-19 period and contribute information on mother and child characteristics when the child is about 20-24 months of age.

The following sections provide a condensed overview of selected characteristics of the sample, the academic work conducted so far, and the work that is currently planned or in preparation.

5.1   Selected Sample Characteristics

Table 10 provides an overview of selected characteristics of study participants at the baseline assessment. As explained earlier (page 32), the samples for this pilot study were not generally random samples of pregnant women in the entire city. The statistics shown in this section can therefore not be generalised to a wider population.

One important goal of EBLS was that participants in each of the study sites were at a similar stage of their pregnancy when recruited. Analyses suggest that this goal was largely achieved. Across the study sites, the average gestational age at the time of the interviews was 33.2 weeks, with only minor variations between the sites from 31.8 weeks in Tarlai to 34.3 weeks in Koforidua.

Across the study sites the average age of participants was 28.1 years. There was some variation between the study sites. On average, participants were youngest in Kingston with an average age of 25.5 years, while the mean age of participants in Cluj-Napoca, Hue and Ragama was close to 30 years. Across the study sites, 30% of the recruited women were in their first pregnancy. The proportion of first pregnancies was lowest in Tarlai (Pakistan) with 12% and highest in Cluj-Napoca with 51%, probably reflecting differences in fertility rates.

With respect to socio-economic status, the data show the average number of years at school and an overall sum index of household goods associated with economic affluence. The average number of years at school varied significantly across the study sites. It was lowest in Koforidua and Tarlai with around eight years of schooling on average. In these two sites over 30% of participants had less than six years of schooling. These were also the sites where participants were most likely to make use of A-CASI or to request that questions were read to them. Education levels were highest in Cluj-Napoca with 12.8 years, Ragama with 11.9 years, and Valenzuela with 11.4 years.

We found large differences between the study sites in respect to the position on the adapted DHS Household Wealth Index, which measures whether a household owns or has access to 16 amenities such as electricity, internet access, a refrigerator and a car. In Valenzuela, participants reported an average wealth index score of 7.7, while participants in Cluj reported an average score of 13.2.

Table 10   Socio-demographic Characteristics, Education, and Socio-economic Resources

Study site	Participants (N)	Weeks pregnant Mean (SD)	Age Mean (SD)	% First pregnancy	Grades in education system Mean (SD)	Household Wealth Index[1]
Kingston (Jamaica)	152	34.0(3.0)	25.5 (5.6)	27%	10.5 (1.0)	9.5 (2.3)
Koforidua (Ghana)	150	34.3 (3.7)	29.1 (6.3)	19%	8.3 (4.3)	8.2 (3.0)
Worcester (South Africa)	150	34.2 (3.2)	27.0 (5.9)	35%	10.5 (1.8)	9.4 (2.7)
Cluj-Napoca (Romania)	150	33.2 (3.3)	30.0 (4.6)	51%	12.8 (1.9)	13.2 (1.3)
Tarlai (Pakistan)	150	31.8 (3.6)	27.3 (5.1)	12%	7.8 (4.7)	8.7 (2.7)
Ragama (Sri Lanka)	152	32.4 (2.8)	29.7 (5.5)	42%	11.9 (1.4)	11.1 (2.6)
Hue (Vietnam)	150	33.2 (2.9)	29.9 (5.1)	29%	10.5 (2.4)	10.6 (1.9)
Valenzuela (Philippines)	154	32.7 (2.9)	27.7 (6.0)	25%	11.4 (2.6)	7.7 (2.5)
Total	1208	33.2 (3.3)	28.1 (5.7)	30%	10.5 (3.2)	9.8 (2.9)
		$F = 11.51$ $\eta^2 = .06$ $p < .0001$	$F = 13.3$ $\eta^2 = .07$ $p < .0001$	$F = 11.46$ $\eta^2 = .06$ $p < .0001$	$F = 51.38$ $\eta^2 = .24$ $p < .0001$	$F = 81.73$ $\eta^2 = .32$ $p < .0001$

Note: The Household Wealth Index is a sum score based on 16 household goods associated with deprivation/affluence. It includes, amongst others, access to electricity, radio, television, computer, internet connection, fridge, mobile phone and car.

However, it is instructive to not only consider mean scores, but to also understand distributional patterns that may reflect inequalities in the quality of life between families and neighbourhoods within a city (Wilkinson, 2005). For example, Figure 11 shows the distribution of the Household Wealth Index Scores in four study sites, where the sampling covered diverse parts of the city. While the samples are not strictly representative, the emerging patterns still seem worth noticing. They suggest some considerable variation in the distribution of Wealth Index Scores, with a considerably higher spread in Tarlai and Valenzuela than in Hue and Cluj.

Figure 11   Distribution of Wealth Index Scores in Four Selected Study Sites
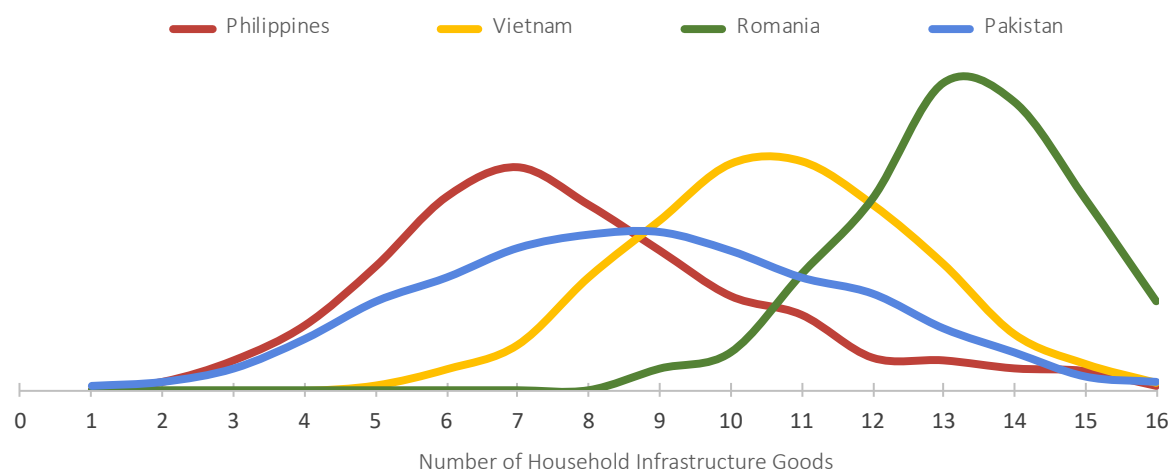
Note: Scores were smoothed with a 3-point moving average

Table 11   Household Structure by EBLS Study Site

City	Nuclear Family		Extended Family				
	Partner/ husband	No of children	Parent	Mother/ Father in law	Sibling	Brother/ Sister in law	Any other relative
Koforidua	57.3%	0.63	19.3%	0.0%	16.0%	2.7%	1.3%
Kingston	44.7%	0.83	33.6%	4.6%	28.9%	3.9%	14.5%
Tarlai	95.3%	1.84	1.3%	53.3%	4.0%	8.7%	58.7%
Valenzuela	81.8%	1.28	25.3%	12.3%	30.5%	17.5%	6.5%
Cluj-Napoca	98.0%	0.49	5.3%	5.3%	2.0%	0.0%	2.7%
Worcester	45.3%	0.68	45.3%	5.3%	40.0%	7.3%	12.7%
Ragama	95.4%	0.74	34.9%	19.1%	12.5%	11.8%	3.3%
Hue	83.3%	0.87	27.3%	44.7%	22.0%	27.7%	10.0%
Total	75.2%	0.91	24.1%	18.0%	19.5%	9.4%	13.7%
	$F = 54.0$	$F = 23.9$	$F = 20.4$	$F = 53.2$	$F = 18.8$	$F = 11.2$	$F = 60.4$
	$\eta^2 = .24$	$\eta^2 = .12$	$\eta^2 = .11$	$\eta^2 = .24$	$\eta^2 = .10$	$\eta^2 = .06$	$\eta^2 = .26$
	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$	$p < .0001$

Household Structure

One important motivation for the EBLS project is to study child development in non-Western contexts and to more fully understand the variety of social contexts and family arrangements that shape the emerging psychology of young children in those countries (Henrich et al., 2010). Based on the household screen administered at the beginning of the survey, Table 11 provides a descriptive overview of main patterns in familial household arrangements.

It shows, first, substantial variation in the proportion of pregnant women that cohabit with a partner or husband, ranging from 42.7% in South Africa to 98% in Romania. Study participants in Cluj-Napoca had the lowest number of children, namely 0.49 on average, while pregnant women in Pakistan had, on average, 1.84 children.

Table 11 also shows large differences in members of the extended family that live in the same household. Participants in Cluj-Napoca were closest to the model of a nuclear family whereby only the partners and children co-reside in the same household. In contrast, in all other study sites large proportions of pregnant women live in extended families that include other relatives. More specifically, a majority of study participants was living in the household with extended family members in Hue (72.7%), Worcester (70.0%), Tarlai (69.3%), Valenzuela (59.1%) and Ragama (56.6%).

The data further suggest that extended family arrangements vary substantially across the samples in the study sites. In Tarlai and Hue, for example, the most typical arrangement is for the mothers to live with the parents of their husband (54.7%). In Kingston, Valenzuela, and Worcester, in contrast, substantial proportions of pregnant women live in households shared with a parent or a sibling.

The Health Status of Pregnant Women

EBLS examined several dimensions of the health status of the participating women and their experiences with their pregnancy. For purposes of illustration, we present descriptive findings on three indicators that may lead to an increased risk for adverse child outcomes (Table 12): the first being the prevalence of substance use (including tobacco, alcohol, cannabis, stimulants, sedatives and other substances) during pregnancy as substance use has been shown to be directly associated with negative effects on maternal and foetal health (Cook et al., 2017) as well-being correlated with a higher risk of exposure to intimate partner violence (McFarlane et al., 1996). The second indicator is the proportion of participants who report an unwanted pregnancy, as research suggests that an unwanted pregnancy

is associated with a greater risk of maternal depressive symptoms (Dibaba et al., 2013; Moosazadeh et al., 2014). The third indicator is the time (in gestational age) when participants had their first health check-up because WHO recommends that pregnant women should have their first contact with an antenatal care provider in the first 12 weeks of gestation.[4]

An analysis of mean scores suggests that there are highly significant differences in each aspect of health status between the study sites. Substance use during pregnancy was below 10% of study participants in Ghana, Pakistan and Sri Lanka, while 66% of participants in South Africa reported consuming at least one psychoactive substance during pregnancy. Across the study sites, we also observe large differences in the prevalence of women who report an unwanted pregnancy, ranging from 0.7% in Cluj-Napoca to 58% among participants in Pakistan. Finally, the average gestational age when women had their first antenatal health check-up was substantially higher than 12 weeks among the study participants in Kingston and Worcester, while almost all study participants in Romania and Vietnam had their first antenatal check at 12 weeks or earlier.

Table 12   Health Status of Pregnant Women

	Substance use during pregnancy (% ever)	Unwanted Pregnancy (%)	% first health check-up after 13 weeks or later
Ghana	6.9%	43.3%	40.0%
Jamaica	28.3%	27.0%	74.0%
Pakistan	8.2%	58.1%	21.3%
Philippines	32.7%	8.5%	25.0%
Romania	28.0%	0.7%	4.7%
South Africa	66.2%	30.2%	59.6%
Sri Lanka	1.3%	11.3%	10.0%
Vietnam	20.0%	30.7%	2.7%
Total	20.0%	26.1%	29.8%
	F = 42.9	F = 33.4	F = 71.16
	η^2= .202	η^2= .16.4	η^2= .294
	$p < .0001$	$p < .0001$	$p < .0001$

Exposure to Violence during Childhood and Pregnancy

In the Foundational Study we focused on asking participants about violent victimisation in two time periods, namely during their own childhood and during their pregnancy.

One important goal of the study was to estimate levels of exposure to intimate partner violence using the WHO Multi-country Study on Women Health and Domestic Violence against Women questionnaire (García-Moreno et al., 2005). The 13-item instrument distinguished emotional, physical and sexual violence. For the purposes of this study, we asked participants about both life-time experiences and experiences in the past six months, i.e. the period that broadly overlaps with the begin of pregnancy.

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[4] https://www.who.int/news/item/07-11-2016-new-guidelines-on-antenatal-care-for-a-positive-pregnancy-experience

Table 13   *Prevalence of Violent Victimisation during Childhood and During Pregnancy*

	Violent Victimisation during Childhood (< age 18 years)			Intimate Partner Violence during Pregnancy (past 6 months)		
	Neglect	Physical	Sexual	Psychological	Physical	Sexual
Ghana	55.7%	44.6%	19.2%	39.0%	10.9%	13.7%
Jamaica	78.9%	70.4%	28.3%	40.1%	15.1%	6.6%
Pakistan	26.5%	26.5%	4.8%	25.9%	12.2%	8.8%
Philippines	44.4%	50.7%	17.9%	23.7%	10.5%	5.9%
Romania	66.7%	53.3%	14.0%	18.0%	1.3%	0.0%
South Africa	75.3%	63.0%	24.5%	35.2%	21.2%	4.1%
Sri Lanka	65.1%	67.8%	7.2%	21.7%	10.5%	4.0%
Vietnam	44.7%	33.3%	6.0%	14.0%	2.0%	1.3%
Total	57.2%	51.3%	15.2%	27.1%	10.4%	5.5%
	F = 21.55 η^2 = .11 p < .0001	F = 16.35 η^2 = .09 p < .0001	F = 9.33 η^2 = .05 p < .0001	F = 19.1 η^2 = .10 p < .0001	F = 12.9 η^2 = .07 p < .0001	F = 31.4 η^2 = .16 p < .0001

Prevalence rates are shown in Table 13. Among all participating pregnant women, 27% had experienced verbal and emotional violence during pregnancy, 10% had experienced physical violence and 6% had experienced sexual violence. Analyses of variance suggest significant differences between the study sites in the extent to which women experienced intimate partner violence during pregnancy. Levels of emotional violence were particularly high in the Jamaican sample (40%), physical violence was experienced by 21% of pregnant women in South Africa, and sexual violence was highest in the sample of Koforidua. Reported violence was lowest in the samples of Cluj-Napoca and Hue.

Similarity and Differences in Patterns of Associations

One of the core questions that EBLS is designed to shed light on is whether the interactions of processes involved in well-being and mental health problems are essentially the same across all human societies, or whether human needs and sensitivities as well as factors that support resilience vary between societies. A set of descriptive graphs shown in Figure 12 highlights the importance of these questions. They show nomological networks of association between six indicators measured at baseline, namely neighbourhood disorder (e.g. crime, noise, drugs), neighbour cohesion (trust in neighbours), perceived stress, depressive symptoms, experiences of intimate partner violence during pregnancy, and adverse childhood experiences.

For example, Figure 12 suggests that some associations across multiple domains of poor well-being and adversity manifest in all cultures and societies, such as the association between experiencing stress and depressive symptoms. In contrast, other associations seem to be more context dependent. For example, poor neighbourhood cohesion and trust appears to be particularly strongly associated with stress and depression in Pakistan, which may be an indication of the importance of group ties for mental well-being in a more collectivistic society.

The small and non-representative samples preclude any firm conclusions. However, some of the emerging patterns may be indicative of some important issues for future research. For example, Figure 12 suggests that some associations across multiple domains of poor well-being and adversity seem to manifest in all cultures and societies, such as the strong association between experiencing stress and depressive symptoms. In contrast, other associations seem to be more context dependent. For example, poor neighbourhood cohesion and trust appears to be particularly strongly associated with stress and depression in Pakistan, which may be an indication of the importance of group ties for mental well-being in a more collectivistic society.

Figure 12 Nomological Network between Six Indicators of Poor Well-being and Adversity

NOTE: NDI = Neighbourhood Disorder, NCO = Neighbourhood Cohesion, STR = Stress, DEP = Depression, IPV = Intimate Partner violence during Pregnancy, ACEs = Adverse Childhood Experiences Score. Bars indicate strength of bi-variate association.
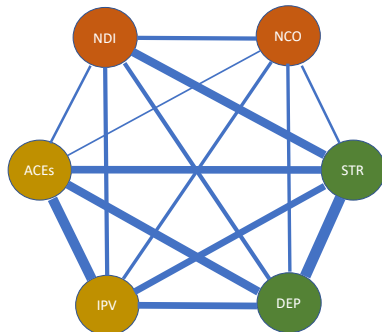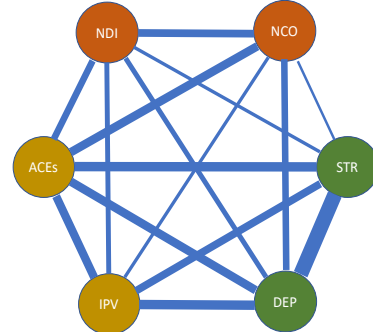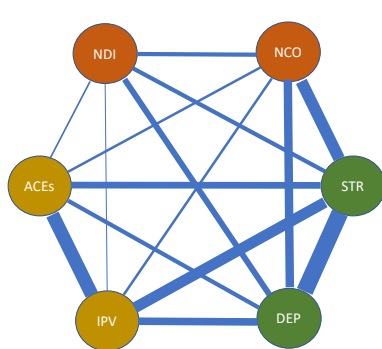
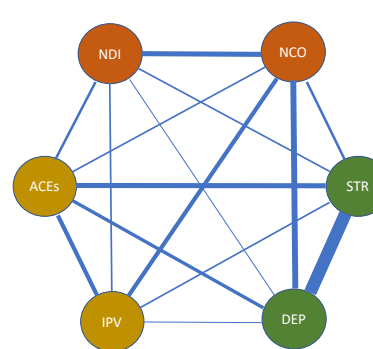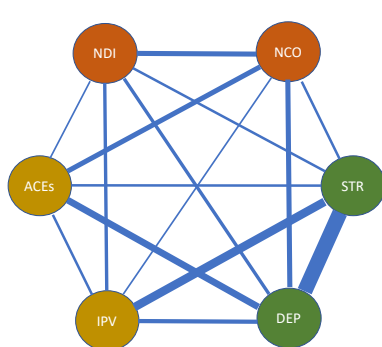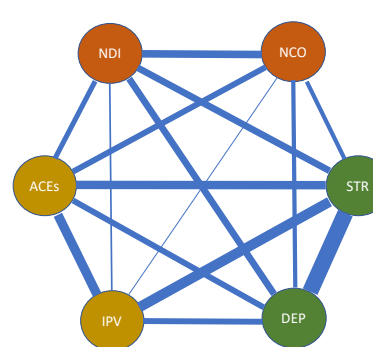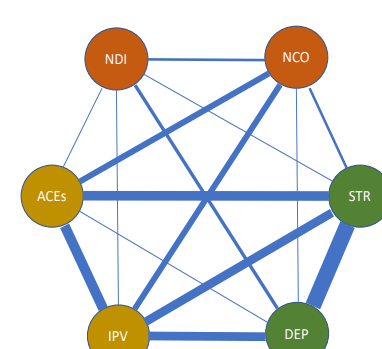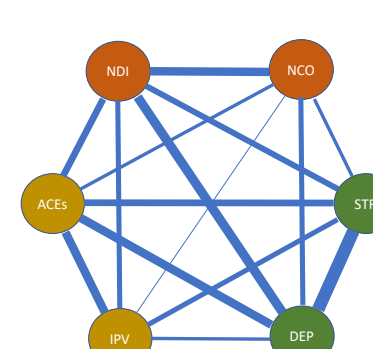## 5.2   Published EBLS-related Research

To date 14 studies have been published that use EBLS data or that build the theoretical and empirical case for the EBLS study. A further 22 publications have been submitted to the EBLS publications' portal. Several of these planned publications are currently in preparation, while others will not start before the final data from the biological samples are available.

This section provides an overview of main findings so far. We have organised the work into four main topics, namely 'Reviewing the evidence and building the field', 'Presenting the study and examining methodological challenges', 'Establishing policy needs and resources', and 'Understanding predictors of maternal and child well-being across Cultures'.

Reviewing the Evidence and Building the Field

The first joint publication of the Consortium was led by *Dr Aja Murray*. It reviewed the state of knowledge on the pathways that link exposure to intimate partner violence during pregnancy (p-IPV) to poor child outcomes in the first years of life (Murray et al., 2020). Based on 112 primary publications, it showed that the association between exposure to perinatal violence and negative child outcomes is relatively well established. In contrast, knowledge regarding the specific social and biological pathways that link p-IPV with child outcomes is more limited. Current evidence points to maternal stress and mental illness, health-related behaviours, infection, and problems with mother–fetal attachment as likely mediating mechanisms. However, their relative weight and their possible interactions remain poorly understood. Understanding mediating mechanisms can be essential for more effective intervention strategies. This review thus informed the design of EBLS, indicating key areas of focus to illuminate these mechanisms.

A related systematic review, led by early career researcher *Huyen Do* and the Vietnam team, focused on the evidence in Vietnam specifically (Do et al., 2019). It pooled information from 15 articles on prenatal intimate partner violence (p-IPV) and its impact upon women and young children in Vietnam. Findings indicated that p-IPV is strongly associated with a greater risk of both mental disorders and adverse birth outcomes (preterm birth and low-birth-weight). The meta-analysis also revealed that women exposed to p-IPV have a four-fold increased risk for prenatal common mental disorder compared to non-abused peers. Women exposed to physical p-IPV also had five-fold increased odds of premature labour and almost six-fold increased odds of having low-birth-weight neonates. However, four of the five primary studies were cross-sectional, and no longitudinal study in Vietnam had examined the development of children beyond the immediate post-birth period.

An umbrella review led by an ECR network member of the Edinburgh team, *Siu Ching Wong*, built on these two reviews to provide a big picture overview of current knowledge on of p-IPV (Wong et al., 2021). She conducted an umbrella synthesis, a review of systematic reviews and meta-analyses examining the predictors, potential outcomes, and interventions for intimate partner violence in the pre-natal and post-natal period. Her review highlighted that knowledge of risk factors is growing and research into p-IPV in LMICs in particular seems to be accelerating; however, there is still a need for robust evidence to inform better interventions.

We also advanced research that can strengthen our reasoning on how a cross-cultural comparative birth cohort study would address key questions in research and policy. In particular, early career researcher *Ruth Brown* at the University of Edinburgh (Brown et al., 2021) led an international Delphi study aimed at gaining insight into what research questions the next generation of birth cohort studies should answer. The study included 24 experts from both high as well as low and middle income contexts. The findings suggest that experts prioritise broadly conceived birth cohort studies that

examine interactions between social, psychological and biological layers of human development, and that have a strong emphasis on informing interventions over the life-course.

Presenting the Study and Examining Methodological Challenges

The Consortium felt it was important to publish the protocol of the EBLS Foundational Study. This joint publication of all senior EBLS Consortium members was led by early career researcher and project coordinator *Dr Sara Valdebenito* (Valdebenito et al., 2020). This publication summarises the more detailed internal protocol of the EBLS study (Appendix 5), including information about the sampling and recruitment procedure, the study design, the participating sites, the instruments and the data collection process. The study protocol serves as a reference for all work based on the EBLS dataset.

Subsequent work examines core psychometric instruments, and whether they are adequate for administration in different cultures. A study led by early career researcher Dr *Sarah Foley* (Foley et al., 2021), now a lecturer at the University of Edinburgh, examined the EBLS measure of maternal-fetal attachment (MFA), the Prenatal Attachment Inventory (PAI). The PAI aims to capture the expectant mothers' behaviours, cognitions and emotions towards the fetus. Foley et al. (2021) examined whether the PAI equally measures the construct of maternal-fetal attachment in all eight EBLS study sites. In seven out of the eight study sites conceptual equivalence of the items could be demonstrated. However, this was not the case in Pakistan, where some items such as *"I stroke the baby through my tummy"* or *"I imagine calling the baby by name"* were rarely endorsed. Possibly, this reflects a social environment characterised by higher rates of infant mortality, more unwanted pregnancies, and lower education levels than those in other study sites. Future work should examine the addition of new items that may better capture the experiences of pregnant women in low- and middle-income countries.

In a paper led by *Dr Aja Murray* we also examined the psychometric properties of the Patient Health Questionnaire (PHQ), a widely used measure for depressive symptoms (Murray et al., 2021). Surprisingly, perhaps, few studies have evaluated the comparability of this instrument across cultural and social contexts. The findings, which are currently under review, suggest acceptable internal consistency and construct validity across all sites. However, in only four of the study sites were the responses given by the participants in line with the proposed single-factor structure, meaning that in some cultures the PHQ-9 may partly measure aspects of poor well-being other than depressive symptoms. Also, the questions on some symptoms (e.g. concentration or sleep problems) showed stronger relations with the overall scale in some sites compared to others. Future studies should either administer a longer version of the PHQ or consider an alternative instrument.

Furthermore, a paper led by early career researcher *Huyen Do* evaluated psychometric properties of the scales that measure wellbeing (the WHO-5 index), perceived stress (the PSS-10) and depression (the PHQ-9) in the Vietnam sample, and their clinical implications on screening pre-and post-natal depression (Huyen Phuc Do, Philip RA Baker, Thang Van Vo, Bao-Yen Luong-Thanh, et al., 2021). The paper suggested that WHO-5 and PSS-10 show good internal consistency as well as concurrent and predictive validity for pre- and post-natal depression. Given these satisfactory psychometric properties, the article concludes that the instruments, translated for the first time into Vietnamese, could be used as brief but broad screening tools that could be integrated into routine psychosocial care for pregnant women in Vietnam and similar cultural contexts.

Finally, a group of early career researchers led by PhD student *Laura Campo* is currently working on an article that examines the sociometric properties of the three measures of neighbourhood characteristics included in the EBLS questionnaire, namely social cohesion and trust, intergenerational closure (i.e. the extent to which adults care about children in the neighbourhood), and neighbourhood

physical and social disorder including crime and violence. In particular, the article tries to examine whether these constructs, which have rarely been used outside the context of high-income countries, measure core dimension on neighbourhood characteristics across the study sites, and whether neighbourhood characteristics are similarly associated with variation in maternal health and mental well-being.

A group of early career researchers coordinated by PhD student *Siu Ching Wong* is examining the most important threat to any cohort study, namely non-response and attrition. More specifically, the group examines factors associated with non-participation in the collection of biological samples, as well as factors associated with non-participation in the follow-up data collection. Understanding how attrition varied between study sites and what factors were associated with the likelihood of non-participation will be an important contribution to building the bases for even more effective recruitment and retention strategies in a future larger study.

Establishing Policy Needs and Resources

Several EBLS publications present findings of the needs and resources assessment to the wider public. This includes the joint report "Addressing Violence against Children" which has been mentioned in previous chapters. Additionally, a publication in the *Pakistan Journal of Public Health* led by early career researcher *Yasmeen Anwar* (Anwar et al., 2020) provides an overview of the needs and resources assessment conducted in Islamabad, and its implications for preventing violence against children in Pakistan.

Finally, a review paper led by early career researcher *Xanthe Hunt* at Stellenbosch University examines the potential of Artificial Intelligence, big data, and mHealth approaches for preventing and addressing violence against children (Hunt et al., 2020). It specifically explores the role that such approaches could play in strengthening the World Health Organization's seven INSPIRE strategies to address violence against children (World Health Organization, 2016). It argues that agent-based models could help to predict where and when violence against children in different age groups is most likely to occur, and how local support systems (e.g., child protection services) or prevention strategies (e.g., parenting support via mobile phones) could best respond to these patterns. It also reviews evidence on how research-based knowledge on, for example, help-seeking behaviour by parents or risk factors for child maltreatment or bullying could become integrated into AI algorithms that inform the delivery of violence prevention and response systems. The article argues that the potential for AI-supported and mHealth approaches is particularly marked in low- and middle-income countries (LMICs), but that building the technological infrastructure would require substantial investment.

Similarly, an article currently under review and led by early career researcher *Huyen Do* (Huyen Phuc Do et al., 2021) presents a systematic analysis of city-level health care and social services for pregnant women in Hue in Central Vietnam, using the WHO INSPIRE framework for ending violence against children as a conceptual framework. Findings show that the pregnant women's and professionals' perceptions about service adequacy were quite similar in five of the seven INSPIRE dimensions. They differed in two ways: pregnant women were more likely than professionals to report limited system-level supports for their partners regarding violence and mental health, while the professionals perceived more weaknesses in policies and management of services. Key challenges emphasised during in-depth interviews with service providers include a lack of dedicated resources to support women who experience violence during pregnancy, inadequate training to sensitise primary health care staff and police, and quite limited multi-sectoral cooperation.

Understanding Predictors of Maternal and Child Wellbeing across Cultures

A final group of papers revolves around using the data of the EBLS Foundational Study for comparative analyses that can inform more comprehensive future work. A research study led by early career researcher *Ruth Brown* at the University of Edinburgh (Brown et al., 2021) explored the role of prenatal depressive symptoms in the relationships between adverse childhood experiences (ACEs) and maternal foetal attachment, using the first wave of collected data. In order to identify the potential differences across the eight EBLS research sites, mediation analyses were conducted on both the total and country-specific samples of expecting mothers. The analyses revealed some unexpected findings. In general, the statistical link between having experienced childhood adversities (e.g., maltreatment, parental separation and abuse) and maternal foetal attachment was fully accounted for by the effects of childhood adversities on depressive symptoms during the third trimester of pregnancy, which then negatively affect maternal foetal attachment. However, on running the analyses at the individual-country level, both positive and negative effects of ACEs on maternal foetal attachment were observed. For example, while ACEs had an adverse impact on foetal attachment in South African and Filipino mothers, Pakistani mothers with similar exposure to ACEs were found to be more securely attached to their child. At the moment we can only speculate about the reasons for these differences. However, they suggest that some putative predictors may have very different effects on outcomes, depending on the social and cultural context. Understanding such differences is essential for effective prevention and intervention strategies.

Another research paper led by early career researcher *Yen B. Luong-Thanh* (Luong-Thanh et al., 2021) assessed the prevalence of depression and its associated factors amongst pregnant women in a central Vietnamese city, using the first wave of collected data. The paper revealed that more than one in 10 women experienced moderate to severe depression during the antenatal stages of pregnancy (12.7%). Experiencing stress, having a husband with a low level of education and perceived low levels of support from their husband were found to be significantly associated with higher odds of antenatal depression amongst the study population. These findings suggested the need to screen for depression during pregnancy in central Vietnam. The authors recommend a collaborative care approach between antenatal care services and mental health care practitioners to ensure that women who have symptoms of antenatal depression are managed appropriately.

A third paper led by *Huyen Do* examined the intergenerational effects of being exposed to childhood maltreatment (CM) and prenatal intimate partner violence (p-IPV) on perinatal mental distress and birth outcomes in central Vietnam (Huyen Phuc Do, Philip RA Baker, Thang Van Vo, Aja Murray, et al., 2021). Findings from this paper indicated that violent victimisation is prevalent in Central Vietnam, with one in two pregnant women experiencing at least one form of childhood maltreatment (CM), while one in 10 pregnant women experienced both CM and p-IPV. Mothers with violent and adverse family backgrounds have twice the risk of poor mental health during pregnancy, and their infants have twice the risk of adverse birth outcomes. The authors argued that social support during pregnancy may have a buffering effect by reducing the long-term impact of childhood traumatic events. They concluded that antenatal care systems need to be responsive to women's previous experiences of violence and maternal mental health, and that the protective role of partner support and social support should also be considered when designing tailored interventions to address violence during pregnancy.

A research paper led by *Thu Dang* (Dang et al., 2021) explored the effects of intimate partner violence during pregnancy (p- IPV) on postpartum depression among women in central Vietnam. p-IPV was defined among 150 women aged 18 years and older in the third trimester of their pregnancy. Then

those women were followed up to 2-5 months after childbirth to assess depression using PHQ-9. Relative risk was estimated to identify the effect of p-IPV on maternal postpartum depression. The paper revealed that 21 women reported IPV during pregnancy (14%). In the follow-up assessment, 8 out of 21 mothers exposed to p-IPV and 23 out of 127 mothers not exposed to p-IPV developed postpartum depression. p-IPV including emotional and physical violence increased the risk of postpartum depression.

The findings support evidence that p-IPV increases the risk of postpartum depression among women in central Vietnam. It is necessary to raise public awareness of early detection and prevention from IPV in pregnant women.

5.3 Planned Future Analyses

Several research articles based on the EBLS data are currently planned or in preparation. The team in Sri Lanka (*Deshani Chathurika*) is currently working on an article that will present findings from the father interviews. The team led by *Dr Aja Murray* (University of Edinburgh) is preparing several articles on the role of biomarkers of stress exposure for understanding the link between adversity and child outcomes. This includes plans to examine the biological mediating pathways between p-IPV and birth outcomes via physiological stress and inflammation, the impacts of maternal ACEs on maternal and child outcomes, and the impact of maternal ADHD symptoms during pregnancy. *Prof. Claire Hughes* will be working with the sites that are realising wave 3 of the Foundational Study on analyses based on the speech samples. Finally, we believe that a published version of this report would be useful because there is a lack of detailed assessments of pilot studies and how they can inform study design of larger projects.

To add to the above-reviewed work, there are numerous future publications under review and planned. This includes plans to examine the biological mediating pathways between p-IPV and birth outcomes via physiological stress and inflammation, the impacts of maternal ACEs on maternal and child outcomes, and the impact of maternal ADHD symptoms during pregnancy. Further, with wave 3 data due to become available in summer 2021, we will be able to examine the longer-term outcomes and trajectories of child development and how they are impacted by early-life contexts, exposures, and supports. A core theme of our planned work is to illuminate not only what are the key factors that support better maternal and child health and well-being, but how might this be locally-influenced and thus how might interventions need to be locally tailored? The involvement of researchers from all sites in these publications is thus critical to provide the insights to make sense of the cross-country differences and universalities that emerge. In this way, we hope that EBLS can help lead the way in addressing the persistent Western-centric bias of research in the social and biomedical sciences.

5.4   Lessons Learned

There were always going to be limitations in the data collected as part of the Foundational Study with respect to representativeness and sample size. Despite these limitations, initial findings suggest important patterns that could be further explored in a main study.

Addressing Valid Measurement across Cultures

In the present pilot study we administered a substantial number of instruments that had never previously been translated into the respective target language. Psychometric analyses conducted so far

suggest that instruments don't always result in optimal equivalence across study sites, for example because mental health issues my manifest by different symptoms, because participants have different responding tendencies in different cultures, or because the questions don't cover aspects of life that matter to a participant in a given culture and society. The pilot study has created an useful starting point for advancing the methodological bases for a developmental science that is less Western-centric.

Variation in Social Structures across the World

It is increasingly recognised that research on the processes that support healthy child development over the life-course needs to adequately consider the variety of familial and cultural contexts that frame the social environment of children's lives globally. In particular, it is necessary to overcome the focus on WEIRD (Western, Educated, Industrialized, Rich and Democratic) societies. The pilot study has shown that the study sites represent a diversity of family structures and living arrangements. Also, research coming out of the pilot study data is beginning to show that some causal mechanisms that bear on the lives of women and their children may vary across cultures and societies, while others may be more generalizable across human societies. We believe that a larger study could be the basis for examining these processes in much greater detail.

Understanding Interrelated Risks and Resilience Mechanisms

The pilot study showed that very substantial proportions of women in the eight study sites had experienced serious violence when they themselves had been children and during their pregnancy. It also suggested that, overall, manifestations of poor well-being and psycho-social risk tended to be correlated. This suggests that a large longitudinal birth cohort study should broadly focus on the dynamics of comorbidity across domains of mental and physical well-being, and including the interrelated dynamics across generations and between family members.

An Open Science Framework

Given that a large longitudinal study would be, in each partnering site, a major investment in time and resources, it would be desirable to further build capacity, in each site, to make the best use of a potentially rich and valuable data source. To achieve this purpose, it would be important to develop an open science framework that gives privileged access to all researchers in a country to their data.

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