BMJ Paediatrics Open

Nairobi Early Childcare in Slums (NECS) Study Protocol: a mixed-methods exploration of paid early childcare in Mukuru slum, Nairobi

Robert C Hughes [ORCID],[1] Patricia Kitsao-Wekulo,[2] Sunil Bhopal,[1,3] Elizabeth W Kimani-Murage,[2] Zelee Hill,[4] Betty R Kirkwood[1]

[1]Department of Population Health, London School of Hygiene and Tropical Medicine Faculty of Epidemiology and Population Health, London, UK
[2]Maternal and Child Wellbeing Unit, African Population and Health Research Center, Nairobi, Kenya
[3]Population Health Sciences Institute, Faculty of Medical Sciences, Newcastle University, Newcastle upon Tyne, UK
[4]Epidemiology and Public Health, Institute of Global Health, University College London, London, UK

Correspondence to
Dr Robert C Hughes; robert.hughes@lshtm.ac.uk

ABSTRACT

Introduction The early years are critical. Early nurturing care can lay the foundation for human capital accumulation with lifelong benefits. Conversely, early adversity undermines brain development, learning and future earning.
Slums are among the most challenging places to spend those early years and are difficult places to care for a child. Shifting family and work structures mean that paid, largely informal, childcare seems to be becoming the 'new normal' for many preschool children growing up in rapidly urbanising Africa. However, little is known about the quality of this childcare.
Aims To build a rigorous understanding what childcare strategies are used and why in a typical Nairobi slum, with a particular focus on provision and quality of paid childcare. Through this, to inform evaluation of quality and design and implementation of interventions with the potential to reach some of the most vulnerable children at the most critical time in the life course.
Methods and analysis Mixed methods will be employed. Qualitative research (in-depth interviews and focus group discussions) with parents/carers will explore need for and decision-making about childcare. A household survey (of 480 households) will estimate the use of different childcare strategies by parents/carers and associated parent/carer characteristics. Subsequently, childcare providers will be mapped and surveyed to document and assess quality of current paid childcare. Semistructured observations will augment self-reported quality with observable characteristics/practices. Finally, in-depth interviews and focus group discussions with childcare providers will explore their behaviours and motivations. Qualitative data will be analysed through thematic analysis and triangulation across methods. Quantitative and spatial data will be analysed through epidemiological methods (random effects regression modelling and spatial statistics).
Ethics and dissemination Ethical approval has been granted in the UK and Kenya. Findings will be disseminated through journal publications, community and government stakeholder workshops, policy briefs and social media content.

INTRODUCTION

More than 250 million children globally are at risk of not reaching their developmental potential, due to adversities in the early years, during which the environment shapes the

What is already known on this topic?

► Use of paid childcare in slums in sub-Saharan Africa although poorly documented seems to be widespread and growing, driven by urbanisation and linked social changes.
► The few studies exploring this suggest that quality is often poor; this has adverse implications for the early child development of these vulnerable children.
► Little is known about parent/carer decision-making about childcare in slums nor that of paid childcare providers.

What this study hopes to add?

► A detailed understanding of the demand for and quality of paid childcare in a typical slum in Nairobi, as representative of those throughout Africa.
► Conceptual frameworks to understand the perspectives and decision-making of parent/carers in their choice of childcare and paid providers in the quality of childcare provided.
► A foundation for effective intervention to improve paid childcare with the potential to reach highly vulnerable children at the most critical time in the life course.

architecture of the brain, which is at peak plasticity.[1] The recently launched WHO/ UNICEF Nurturing Care Framework (NCF) sets out what is needed for children to thrive: good health, adequate nutrition, responsive caregiving, opportunities for early learning, and security and safety (figure 1).[2,3]

With unplanned urbanisation accelerating, and urban populations growing at twice the rate of rural ones, an increasing proportion of children at risk of suboptimal development lives in slums.[4] For example, approximately 60% of Nairobi's population lives in slums,[5] with consequences for social and family structures.[4] More mothers work, nuclear rather
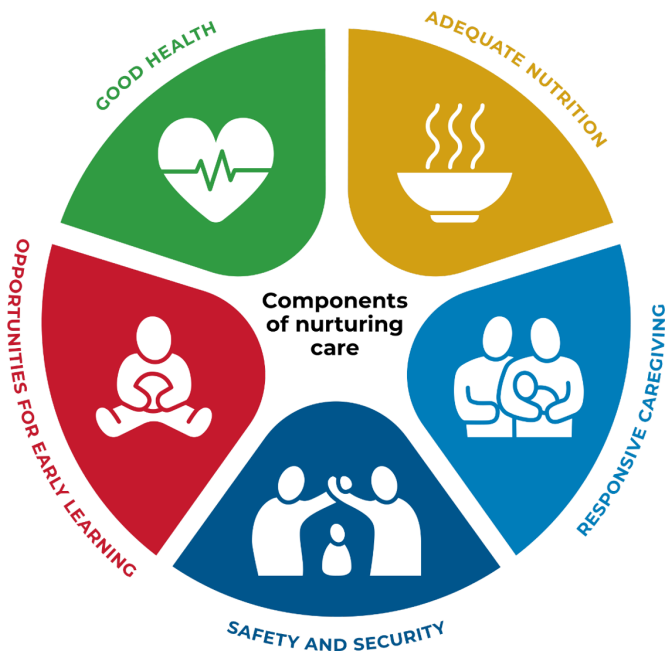
Figure 1 The components of nurturing care.[3]

than extended families are the norm, and fewer older siblings are available to look after younger siblings due to welcome gains in school enrolment. These changes drive demand for paid childcare,[6 7] the quality of which is likely to impact on early child development.

Recognising that improving paid childcare in slums may be a way to reach a vulnerable population in the critical early years, donors, non-governmental organisations and international agencies are beginning to explore this as a potential intervention opportunity.[8] Small-scale interventions are underway in a number of slums.[9 10] However, lessons from other quality improvement initiatives, in both health and education, suggest that interventions should be designed based on a detailed understanding of the dynamics of the current provision, and of the behaviour and motivations on both supply and demand sides.[11 12] In addition, the impact of COVID-19 on childcare in slums is unclear, yet is likely to be significant.[13]

Few studies have explored the current quality of childcare provision in slums in Africa, and those which have, identify deficiencies across all NCF domains.[5 14–17] Overall, the available evidence suggests that the quality of paid childcare is often poor. Considerable evidence gaps remain in our understanding of this growing phenomenon.

The Nairobi Early Childcare in Slums Study is a mixed methods programme of research which aims to address these gaps, by building a rigorous understanding of the current state of childcare in a slum typical of urbanising sub-Saharan Africa.

The specific objectives are:
1. To understand the use of paid childcare providers in Mukuru slum, Nairobi, Kenya:
   a. Estimating the proportions of young children aged under 5 years that are: in paid childcare; cared for at home by a parent, extended family member, or older sibling; left at home alone or taken to place of work.
   b. Describing the type of paid providers and reasons and patterns of use (eg, timing, seasonality).
   c. Determining what parent/carer characteristics (eg, type or location of employment, socioeconomic status, education, length of time in the slum) are associated with use of different childcare options.
2. To map the structure and provision of paid childcare in Mukuru slum (spatial distribution, size, personnel, training and operations) and to assess its quality.
3. To develop conceptual frameworks in order to understand:
   a. Parental/carer decision-making about childcare in slums including the priorities, processes and context that influence the choices made.
   b. The motivations and behaviours of paid childcare providers, and what enables and constrains the quality of the care and early learning they provide; in order to inform intervention strategies aimed at ensuring all slum children have access to quality care and education in the early years of life.

Through gaining a deep understanding of the current situation and decision-making, we will be able to inform the design, delivery and evaluation of future childcare interventions which can reach some of the most vulnerable children at the most critical time in the life course.

METHODS AND ANALYSIS
Study setting
Mukuru has been selected as typical of the larger and longer established slums across Nairobi and because existing contacts with community organisations working there provide an entry point, critical to conducting research in the complex context of a slum. It has a current population around 300 000, divided into six main settlements, and is characterised by high levels of poverty, poor sanitation, inadequate shelter, poor infrastructure, high levels of insecurity and low rates of formal employment.

Overview of study design
The following methods will be carried out sequentially to enable emerging insights to inform subsequent data collection methods and analysis:
1. Qualitative research (in-depth interviews and focus group discussions) with parents and other carers to explore decision-making around childcare.
2. Household survey to determine who cares for children under 5 years of age, and the parent/carer and child characteristics associated with the use of different childcare approaches.
3. Mapping of paid childcare providers.
4. Provider survey including a quality assessment of services provided.
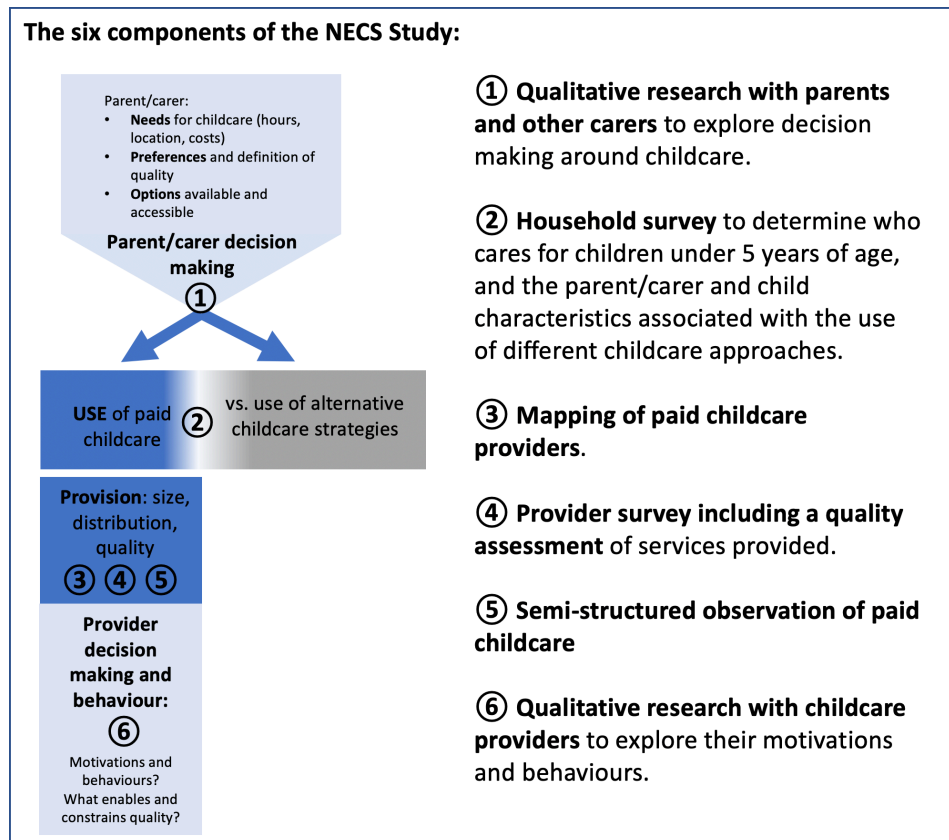5. Semistructured observation of paid childcare.

Figure 2 The six components of the NECS Study. NECS, Nairobi Early Childcare in Slums.

6. Qualitative research (interviews and focus groups) with childcare providers to explore their motivations and behaviours.

These six components are summarised in figure 2.

All fieldwork will be overseen by a research officer employed by the African Population and Health Research Center for this study. For safety reasons, data collectors will be accompanied by a locally recruited community members for all data collection activities. This person will be asked to not influence data collection in any way and will not be present while surveying is completed; for example, they will stay outside when surveys, interviews and observations are being completed.

All data collection instruments and tools (including questionnaires, topic guides and observation checklists) will be made available on the study page on the London School of Hygiene & Tropical Medicine (LSHTM) Data-Compass website.[18]

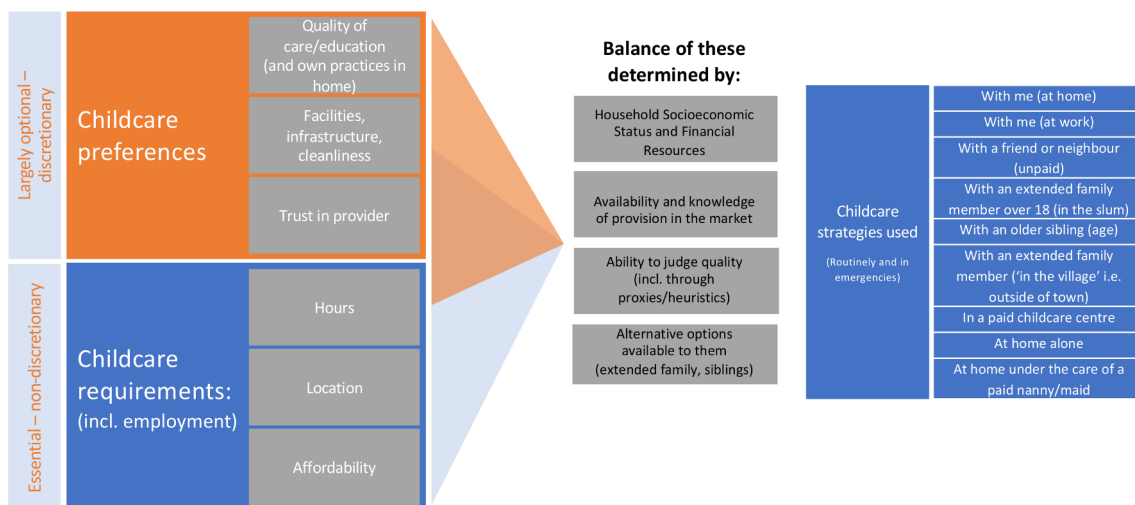### Qualitative research with parents and other carers

Parents/carers of children under 5 years will be recruited by locally hired community health volunteers (who are paid a small recurrent stipend by the county government and are known to community members). In-depth interviews will be carried out with a purposive sample of: mothers, fathers and non-parent carers (such as grandparents), users and non-users of paid childcare, and those with and without school-aged children. Topic guides (based on a conceptual framework we have developed

drawing on a literature review and team discussions, figure 3) will encourage parents/carers to share their individual experiences and dilemmas in managing their needs and aspirations for childcare. Focus groups will explore more generalised themes, including the wider challenges of caring for children in a slum. Pile sorts will be used to encourage interaction and to stimulate discussion around the advantages and disadvantages of different childcare strategies.

We anticipate 15–25 interviews and 4–6 focus groups (each with 6–8 participants) with actual numbers determined by when data saturation is approached. Interviewers will be graduates, with previous research experience desirable but not essential. They will be recruited from nearby slums and trained locally for 4–5 days, including practical exercises using (pretested) topic guides and simulated interviews and focus groups.

Interviews and focus groups will last 45–60 min and will be conducted in Kiswahili at or close to participants' homes, in community centres or similar neutral venues. They will be audio-recorded, translated into English and then transcribed. Notes will also be taken by the interviewer in English. Translation and transcription will be completed in small batches throughout data collection. Review of transcripts, alongside daily debriefing meetings to discuss and reflect on findings. will be used to provide feedback on interview/facilitation techniques and to discuss any modification or topic guides; these

Draft conceptual framework:
Parent/carer childcare decision making

Figure 3 Draft conceptual framework for parent/carer childcare decision-making.

will involve interviewers, supervisors and the investigator team, who will join in person or via telephone/video call. A subset of transcripts (10%–15%) will be reviewed and compared with audio files by the investigator team to ensure transcription and translation quality.

Analysis: Daily debriefing meetings described above will be used to encourage reflexivity, and iteration of topic guides and emerging analysis. Transcripts will be double coded using NVivo[19] by RCH and the research officer. Thematic analysis of the interviews and focus groups will be carried out; transcripts and linked field notes will be coded to iteratively identify emerging themes and concepts and to build on draft conceptual or explanatory frameworks.

Household survey
Four hundred eighty households with a child aged under 5 years will be recruited using a cluster sampling scheme; 24 starting points will be randomly selected, four from each of the six subdivisions of the Mukuru slum, which will be demarcated through review of OpenStreetMap satellite imagery by RCH, PK-W and EWK-M in conjunction with locally recruited data collectors familiar with the slum's boundaries. Four starting points in each of the six subdivisions will be selected at random from a computer-generated list of all Global Positioning System (GPS) coordinates which fall inside the subdivision. Twenty households with children under 5 years will be enrolled from each of these 24 starting points as follows, starting with the nearest household and proceeding clockwise in increasing concentric circles.

The sample size (480 respondents) has been calculated in order to yield estimates of type of childcare used with precisions of at most ±5% including a 25% adjustment for clustering.[20] One limitation of this approach is that we will be unable to weight data for variable population density. The planned approach was developed in order

to balance pragmatism, resource constraints and the dynamic nature of the slum; a sampling frame could become rapidly out of date due to high levels of population turnover, which have been estimated at up to 25% per year[21] but may be even higher due to the ongoing COVID-19 epidemic.[13]

Data will be collected in Kiswahili using tablets programmed using SurveyCTO,[22] which is based on Open Data Kit and includes range and consistency checks.[23] The survey domains are summarised in box 1, but may be updated drawing on analysis of the interviews and focus groups with parents/carers. The study aims and methods will be explained, and consent to participate will be sought from the youngest child's primary household-caregiver. Visits will be timed to allow for those who work during the day so will include early mornings (06:00–08:00) and evening (17:00–18:30) alongside normal working hours. Up to two return visits at different times of the day will be made where respondents are not at home; after this the next closest eligible household will

---

Box 1 Household survey domains

► Household composition (including sex and age of adult(s) and child/children, male/female/child headed) plus Global Positioning System coordinate.
► Type of childcare used (including exploring seasonality and emergencies) with the name or other identifier of any childcare providers used.
► Reasons for choice.
► Parental employment (location, sector, formality, hours, seasonality).
► School and preschool attendance of older siblings.
► Tenure in slum.
► Parental education and household assets (as a proxy for socioeconomic status).

be invited to participate. If recruitment is poor, weekend visits will be made.

Quality assurance will be through daily supervisor reviews of data collected including timestamp and GPS coordinates, and random repeat visits to verify data collection in at least 10% of households.

Analysis will be carried out using Stata.[24] Random effects regression modelling will be used to estimate proportions of each of the key childcare strategies used, adjusted for the clustered design, and to explore parent/carer and child characteristics associated with the use of different childcare strategies.

Mapping of paid childcare providers

Paid childcare providers will be defined as centres where paid childcare services are provided to any number of children under 5 years, and which are open to the 'general public', that is, not just a private arrangement with a neighbour.

These will be mapped in liaison with local community health volunteers and augmented with snowball sampling and the household survey data. Basic data will be collected using SurveyCTO on tablets or smartphones on: GPS coordinates; opening hours; length of operation; numbers of staff and children; number of rooms and contact details. Providers will be invited to take part in a more detailed follow-up survey, and where possible follow-up appointments will be made for this.

Analysis of mapping data will be carried out using the open source Q-GIS software[25] and will seek to explore any clustering of childcare providers, for example around schools, clinics, and any other government or non-government services which may be relevant to design of support/supervision interventions. The location of these will be determined from existing open source OpenStreetMap maps[26] and summary statistics on opening hours, length of operation, staff and child numbers and ratios will be calculated. The maps generated will help to inform planning and data collection for the provider survey and quality assessment.

Provider survey including quality assessment

All mapped providers who consent to a follow-up visit will be revisited at an agreed (by telephone) day and time. We anticipate a sample size of 150–300 providers based on existing estimates of use of childcare[7] and anticipated rates of consenting to participate based on the experience of the Kidogo social enterprise who operate in similar slums.[9] The survey will be informed by existing childcare and family care environmental scales[27–29], with adaptation to the local (low-income) context. The person who is responsible for the centre day-to-day will be asked to self-report on a series of questions exploring:

► Their own education, previous employment and that of any staff.
► The number and ages of children they look after (including reported 'normal' days, the last day open and seasonality).

► Services provided (hours of operation, any food provided).
► Indicators of early learning opportunities (for example play/learning resources, reported time spent on different activities).
► The physical environment (including basic health and safety, water, sanitation, hygiene).
► Any outreach activities with parents (for example take-home exercises/resources or reports).
► Finances: fees, collection, costs, profit/loss.
► Any regulations they follow, and links to other services (for example referrals to health or safeguarding services).

The survey will be conducted during what is likely to be 'peak' demand (midway through a school term). A subset (up to 10% of providers) will be revisited during a likely 'trough' time of year (midschool holidays) in order to explore seasonal variation.

Analysis: Regression modelling will explore the associations between different potential 'signal functions' for quality of childcare. The signal functions will draw on a literature review plus analyses of data collected earlier in the study to allow parental definitions of quality in the slum to be incorporated. We anticipate these will include: (1) staff:child ratio; (2) training/age/experience/gender of providers; (3) fees charged; (4) reported presence/absence of key resources or features of the environment; and (5) reported daily activities. We will explore which of these characteristics are clustered, and the extent of variation between providers. We will then construct a composite self-reported slum childcare quality score for further testing and validation against child development outcomes.

Semistructured observation of paid childcare

A purposive sample of 20–30 providers completing the survey, including both those reporting apparently higher and lower quality services based primarily on analysis of the provider survey, will be invited to consent to direct observation of their normal operations.

Observations will last 1 hour and will be conducted between 08:00 and 16:00 avoiding key drop-off and pick-up times and likely nap times. Mealtimes will be observed where feasible. The frequency of key observable 'signal functions' of quality childcare (again drawing on a combination of literature review and analyses of preceding study activities) will be recorded by observers using a checklist. These will include a combination of positive and negative behaviours, practices, or activities and features of the childcare environment:

► Levels of linguistic interaction (simple word counts provider to child).
► Harsh discipline (raised voices, any physical punishment—with accompanying protocols for when/how data collectors should intervene).
► Feeding and hygiene behaviours (assistance and encouragement at mealtimes).

- ► Early learning (observed activities and resources, age appropriateness).
- ► The childcare environment (observable health and safety, water/sanitation, space, ventilation, light).

In addition, observers will take contemporaneous notes to capture the overall nature and atmosphere of the childcare centre, and their impressions and perspectives on quality.

Analysis: Translated and transcribed notes will be coded and analysed using NVivo. Qualitative analysis will seek to inform development of a series of vignettes capturing any emerging typologies of slum childcare, in order to gain a rich description of different ways that paid childcare is provided. Descriptive statistics on levels and distribution of observed signal functions will be compared with self-reported data where possible (for example, regarding staffing levels, routines and the childcare environment).

Qualitative research with childcare providers

Interviews and focus groups will be carried out with a purposive sample of both apparently higher and lower quality childcare, and smaller and larger childcare providers drawn from the provider survey respondents. Interviewer training, data management and quality assurance will be as described above for the qualitative work conducted with parents/carers.

Specific themes explored will be determined by analyses of earlier work; anticipated themes include:
- ► Entry into the childcare market.
- ► Motivations and ambitions.
- ► Determinants of current practice/operations, including both formal and informal regulation.
- ► Challenges faced working in childcare, and ways to overcome these (with or without external involvement).

We anticipate 15–25 interviews and 4–6 focus groups, depending on when saturation is reached on key emerging themes.

Data analysis procedures and approaches will be as described above for qualitative work with conceptual frameworks developed to describe childcare providers' behaviours and motivation.

Data analyses plans

Detailed analysis plans for both qualitative and quantitative data will be published on the study page of LSHTM DataCompass.[18]

Impact of COVID-19

At the time of submission of this paper, the start of data collection has been delayed by the SARS-CoV-19 (COVID-19) pandemic. To protect participant and data collector safety and in order to mitigate the impacts of the epidemic on the research, we are currently exploring whether to reorganise data collection activities (including conducting some activities in parallel rather than sequentially) alongside remote (telephone) data collection to augment or substitute

methods described above. Any updates to the study protocol, methods or tools will be posted at the Study LSHTM DataCompass website.[18]

Data synthesis and stakeholder involvement

A series of wider stakeholder meetings with relevant governmental and non-governmental representatives in Nairobi will be conducted alongside the fieldwork and analysis. These will enable both refinement of the study design and rapid dissemination of the study findings.

The focus for the final stakeholder meeting will be synthesis of study findings in order to (1) develop a candidate slum childcare quality assessment tool, and (2) inform the design of policy and programme interventions with the potential to improve childcare in slums.

We envisage that the quality assessment tool will include both provider-reported and directly observed items, and will be appropriate for subsequent validation studies to assess correlation to child development outcomes. Through basing the development of both the quality assessment tool and interventions on a rigorous understanding of the current situation and the beliefs and perspectives of all key stakeholders, we anticipate these tools and approaches will be more likely to be acceptable, effective and scalable.

Patient and public involvement

Community members will be involved throughout the research. The Ruben Centre, a highly regarded community-based project based in the Mukuru slum[30] will assist in negotiating access to the community, local recruitment of interviewers and data collectors and hosting a series of community engagement meetings where initially the study design will be discussed, and later results will be disseminated.

Ethics and dissemination

Informed and voluntary consent will be sought from all study participants for the surveys, interviews and focus groups.

For observation of childcare centres, verbal and written information will be given to providers when seeking their consent. In addition, advanced information will be provided for parents in the form of a written notice to be handed out at pick-up, and a prominently displayed information notice. Parents/carers will be invited to raise any concerns/objections with either the provider (who will be asked to relay these to the research team) or directly with the research team (via a provided cellphone number), enabling them to anonymously request that the observation does not go ahead.

Consent will not be directly sought for mapping of childcare providers, given that these are publicly operating businesses, many displaying signboards or painted names, and as data collected will not be shared with any authorities or regulators in any identifiable/traceable

way, reducing the risk of harm or inconvenience to the mapped providers.

Alongside journal publications, dissemination activities include a series of community and government stakeholder workshops, creation of policy briefs and linked social media content.

ORCID iD
Robert C Hughes http://orcid.org/0000-0002-1345-3063

REFERENCES

1 Lu C, Black MM, Richter LM. Risk of poor development in young children in low-income and middle-income countries: an estimation and analysis at the global, regional, and country level. *Lancet Glob Health* 2016;4:e916–22.
2 WHO. Nurturing care for early childhood development: linking survive and thrive to transform health and human potential, 2019. Available: http://www.who.int/maternal_child_adolescent/child/nurturing-care-framework/en/ [Accessed 17 May 2019].
3 WHO. Improving early childhood development: who guideline, who ECD guideline, 2020. Available: https://www.who.int/publications-detail-redirect/improving-early-childhood-development-who-guideline [Accessed 1 Jul 2020].
4 Ezeh A, Oyebode O, Satterthwaite D, *et al*. The history, geography, and sociology of slums and the health problems of people who live in slums. *Lancet* 2017;389:547–58.
5 Kimani-Murage EW, Muthuri SK, Oti SO, *et al*. Evidence of a double burden of malnutrition in urban poor settings in Nairobi, Kenya. *PLoS One* 2015;10:e0129943.
6 popcouncil. Balancing paid work and child care in a slum of Nairobi, Kenya: the case for centre-based child care, 2019. Available: https://www.popcouncil.org/research/balancing-paid-work-and-child-care-in-a-slum-of-nairobi-kenya-the-case-for [Accessed 17 May 2019].
7 Clark S, De Almada M, Kabiru CW, *et al*. Balancing paid work and child care in a slum of Nairobi, Kenya: the case for centre-based child care. *J Fam Stud* 2018;1:1–19.
8 unicef. Redesigning the workplace to be family-friendly:What governments and businesses can do, 2019. Available: https://www.unicef.org/early-childhood-development/family-friendly-policies [Accessed 28 Nov 2019].
9 Kidogo. Early years – unlocking potential. transforming trajectories, 2018. Available: http://www.kidogo.co/ [Accessed 21 Feb 2018].
10 Tiny Totos -Latest. Transforming Daycares transforming lives, 2019. Available: https://www.tinytotos.com/ [Accessed 20 May 2019].
11 Shah NM, Brieger WR, Peters DH. Can interventions improve health services from informal private providers in low and middle-income countries?: a comprehensive review of the literature. *Health Policy Plan* 2011;26:275–87.
12 Srivastava P. *Low-fee private schooling: aggravating equity or mitigating disadvantage?* Symposium Books Ltd, 2013.
13 Corburn J, Vlahov D, Mberu B, *et al*. Slum health: arresting COVID-19 and improving well-being in urban informal settlements. *J Urban Health*.
14 Mwase I, Mutoro A, Owino V, *et al*. Poor infant feeding practices and high prevalence of malnutrition in urban slum child care centres in Nairobi: a pilot study. *J Trop Pediatr* 2016;62:46–54.
15 Mutua MK, Kimani-Murage E, Ettarh RR. Childhood vaccination in informal urban settlements in Nairobi, Kenya: who gets vaccinated? *BMC Public Health* 2011;11:6.
16 APHRC. Exploring the challenges in combining work and care for young children: use of PhotoVoice with mothers from an urban Nairobi slum, 2019. Available: https://aphrc.org/?publications=exploring-challenges-combining-work-care-young-children-use-photovoice-mothers-urban-nairobi-slum [Accessed 17 May 2019].
17 APHRC. Daycare in a Nairobi informal settlement: a SNAP shot of Korogocho, 2019. Available: https://aphrc.org/backup/post/publications/daycare-nairobi-informal-settlement-snap-shot-korogocho [Accessed 17 May 2019].
18 Hughes R, Kitsao-Wekulo P, Bhopal S, *et al*. The Nairobi early childcare in slums (NECS) study, 2020. Available: https://datacompass.lshtm.ac.uk/1780/ [Accessed 30 Jun 2020].
19 NVivo. Buy NVivo now, 2019. Available: https://www.qsrinternational.com/nvivo/nvivo-products [Accessed 20 May 2019].
20 Kirkwood BR, Sterne JAC. *Essential medical statistics*. 3 edn. Malden, Mass: Wiley-Blackwell, 2008.
21 Improving Health in Slums Collaborative. A protocol for a multi-site, spatially-referenced household survey in slum settings: methods for access, sampling frame construction, sampling, and field data collection. *BMC Med Res Methodol* 2019;19:109.
22 SurveyCTO. Product overview, 2019. Available: https://www.surveycto.com/product/ [Accessed 27 Nov 2019].
23 Open Data Kit - Software. Announcing changes to broaden our community, 2019. Available: https://opendatakit.org/software/ [Accessed 27 Nov 2019].
24 Stata. Software for statistics and data science, 2019. Available: https://www.stata.com/ [Accessed 20 May 2019].
25 QGIS. Welcome to the QGIS project! 2019. Available: https://www.qgis.org/en/site/index.html [Accessed 27 Nov 2019].
26 Open StreetMap. Welcome to OpenStreetMap! 2019. Available: https://www.openstreetmap.org/#map=19/-1.31592/36.86922&layers=G [Accessed 27 Nov 2019].
27 A. Infant/Toddler Environment Rating Scale (ITERS-R). Environment rating scales, 2019. Available: https://ers.fpg.edu/infanttoddler-environment-rating-scale-iters-r [Accessed 20 May 2019].
28 Hamadani JD, Tofail F, Hilaly A, *et al*. Use of family care indicators and their relationship with child development in Bangladesh. *J Health Popul Nutr* 2010;28:23–33.
29 Family Child Care. Environment rating Scale® revised (FCCERS-R) | environment rating Scales®, 2019. Available: https://ers.fpg.unc.edu/family-child-care-environment-rating-scale%C2%AE-revised-fccers-r [Accessed 27 Nov 2019].
30 Ruben centre. Ruben beyond borders, 2020. Available: https://www.rubencentre.org [Accessed 2 Mar 2020].