







Impact of SARS-CoV-2 infection and mitigation strategy during pregnancy on prenatal outcome, growth and development in early childhood in India: a UKRI GCRF Action Against Stunting Hub protocol paper

Modou Lamin Jobarteh ¹, Deepak B Saxena,² Bharati Kulkarni,³ Komal Shah,² Santosh Kumar Banjara ⁴, Priyanka Akshay Shah ², Farjana Memon ², Monica Chilumula,⁵ Dharani Pratyusha Palepu ⁴, Kiruthika Selvaraj,³ Teena Dasi,³ Radhika Madhari,³ Beatriz Calvo-Urbano,⁶ Julie Dockrell,⁷ Catherine Antalek,⁸ Hilary Davies-Kershaw ⁹, Elaine Ferguson,¹ Claire Heffernan^{1,10}

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For numbered affiliations see end of article.

Correspondence to

Dr Modou Lamin Jobarteh; modou.jobarteh@lshtm.ac.uk

ABSTRACT

Introduction The COVID-19 pandemic has offset some of the gains achieved in global health, particularly in relation to maternal, child health and nutrition. As pregnancy is a period of plasticity where insults acting on maternal environment have far-reaching consequences, the pandemic has had a significant impact on prenatal outcomes, intrauterine and postnatal development of infants. This research will investigate both the direct and indirect impacts of the COVID-19 pandemic during pregnancy on prenatal outcomes, growth and development in early childhood.

Methods and analysis Community and hospital data in Hyderabad and Gujarat, India will be used to recruit women who were pregnant during the COVID-19 pandemic and contracted SARS-CoV-2 infection. In comparison with women who were pregnant around the same time and did not contract the virus, the study will investigate the impact of the pandemic on access to healthcare, diet, nutrition, mental health and prenatal outcomes in 712 women (356 per study arm). Children born to the women will be followed prospectively for an 18-month period to investigate the impact of the pandemic on nutrition, health, growth and neurocognition in early childhood.

Ethics and dissemination Ethics approval was granted from the institutional ethics committees of the Indian Institute of Public Health Gandhinagar (SHSRC/2021/2185), Indian Council of Medical Research-National Institute of Nutrition (EC/NEW/INST/2021/1206), and London School of Hygiene and Tropical Medicine (72848). The findings of the study will be disseminated to policy and research communities through engagements, scientific conferences, seminars, and open-access, peer-reviewed publication.

INTRODUCTION

India has an enduring commitment to improve the nutrition and health of its population.¹ Globally, India has one of the highest

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ The COVID-19 pandemic has caused unprecedented disruptions to health, food systems, economies and the livelihoods of millions of people.
- ⇒ The pandemic has also contributed to the morbidity and mortality of millions of people globally, and caused unusually higher adverse maternal and birth outcomes, including maternal death, stillbirth and depression.

WHAT THIS STUDY ADDS

- ⇒ This study will improve understanding of the long-term impact of SARS-CoV-2 infection and public lockdown during pregnancy on child growth and development.
- ⇒ It will investigate the impact of the pandemic on access to healthcare, food and nutrition during pregnancy and maternal mental health.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ This study will support post-pandemic recovery and resilience efforts and help guide the development of evidence-based approaches and strategies to protect women and children.

burdens of undernutrition, with 34.7% of children under-5 years of age having stunted growth and 51.4% of women of reproductive age (ie, 15–49 years) being affected by anaemia,² which are directly attributable to factors such as inadequate dietary intake of nutritious foods, infectious diseases, poor hand hygiene and sanitation.³ These figures

and other indicators of maternal and child undernutrition and mortality are likely to have increased with the emergence of the coronavirus (COVID-19) pandemic.⁴ The exacerbation is likely due to disruptions to food systems, earnings and nutrition programmes affecting access, affordability of foods and dietary intake.^{5–7}

India has been severely impacted by the pandemic with more than half a million (>530 000 as of January 2023) recorded deaths due to COVID-19.⁸ The second wave of the pandemic in India, which started around March 2021, has been the deadliest so far, affecting many sectors of the country including health systems, the economy and food systems.⁹ In India and other affected countries, mitigation strategies such as mandatory face covering, public lockdown and curfews were implemented to curb the spread of the virus, and minimise severe forms of the disease, hospital admission and death.¹⁰ While these mitigation strategies are necessary to reduce high infection rates, its introduction can have unintended consequences on high-risk groups such as pregnant women and offspring.

Research has revealed that pregnancy outcomes have worsened worldwide during the pandemic, with an increase in maternal deaths, stillbirths and maternal depression,^{11 12} and with adverse effect on early childhood neurocognitive development.¹³ During the second wave of the pandemic, hospitals across India reported an unusually high spike in maternal mortality and stillbirths.¹⁴ This was attributed to disruptions in Maternal and Child Health services, in part due to pregnant women not attending routine antenatal clinics for fear of contracting the virus and hospitals struggled to support pregnant women who contracted the virus.¹⁴

This study will investigate the impact of SARS-CoV-2 infection and public lockdown during pregnancy on growth and development in early childhood in Gujarat and Hyderabad, India. Currently, the data on the impact of SARS-CoV-2 infection or public lockdown during pregnancy on childhood growth and development are very limited. As a result, there is high public health interest to establish research cohorts that can provide an understanding of the long-term impacts of the COVID-19 pandemic during pregnancy.

The evidence generated from this study will support post-pandemic recovery and resilience efforts and help support the development of evidence-based approaches and strategies to protect women and children.

METHODS AND ANALYSIS

Study design

This cohort study is designed to longitudinally assess the impact of the COVID-19 pandemic on growth and development in early childhood. The study will comprise of two groups of dyads (mother–baby pairs) through recruiting: (a) women who were pregnant during the COVID-19 pandemic in India and had SARS-CoV-2 infection during the pregnancy, and (b) women who

were pregnant around the same time and had no known SARS-CoV-2 infection (i.e., were tested negative) during the pregnancy. Mother–baby pairs in the two groups will be recruited postnatally, between 0 and 24 months after birth, and prospectively followed for an 18-month period. Hospital and community records will be used to match the groups (cases and controls) for age, sex (of the child) and location (community, village, town or city) to facilitate unbiased comparison. Study-specific assessments will be conducted at enrolment into the study (ie, within 1 week of informed consent) and 6, 12 and 18 months later to investigate the impact of SARS-CoV-2 infection and public lockdown during pregnancy on maternal, birth and the development trajectory of children in the two groups. The conceptual framework of the study is elaborated in [figure 1](#).

Outcomes

The primary outcome of this study is growth and development in early childhood, which includes anthropometry (i.e., length, weight, mid-upper arm circumference (MUAC), head circumference, skin fold thickness and associated Z-scores, including length of age Z-score (LAZ) and weight of length Z-score (WLZ)) and neurodevelopment (ie, cognition, motor and social development) during the 18-month follow-up period. Other outcomes of interest are availability, access and affordability of foods, healthcare and maternal mental health during pregnancy, birth/pregnancy outcome, child morbidity, nutritional status, biochemical markers of inflammation, stress, growth hormone, plasma ACE2 and transmembrane protease, serine 2 (TMPRSS2) ([table 1](#)).

Recruitment

The study will be conducted in Ahmedabad and Sabarkantha regions of Gujarat, and Hyderabad, Telangana, India. In Gujarat, hospital and community records of women who had COVID-19 infection (confirmed through PCR test) during pregnancy will be used to generate the contacts of women to approach for recruitment. In Hyderabad, women recruited in an existing observational study and tested for COVID-19 infection during pregnancy will be identified for inclusion. Women identified for the study will be approached by study staff. At the first point of contact, study staff will use a brief eligibility questionnaire to confirm the identity and eligibility of the woman. The criteria for eligibility are as follows:

- ▶ Women aged 18–45 years.
- ▶ Pregnant during the coronavirus pandemic in India.
- ▶ Had a coronavirus test during pregnancy.
- ▶ Singleton pregnancy.
- ▶ Baby aged between 0 and 24 months.
- ▶ Currently living in and agrees to continue living in areas of Gujarat and Hyderabad during the study period.

Once eligibility is confirmed, staff will use the participant information sheet to explain the details of the study procedures. Women will be given up to 48 hours

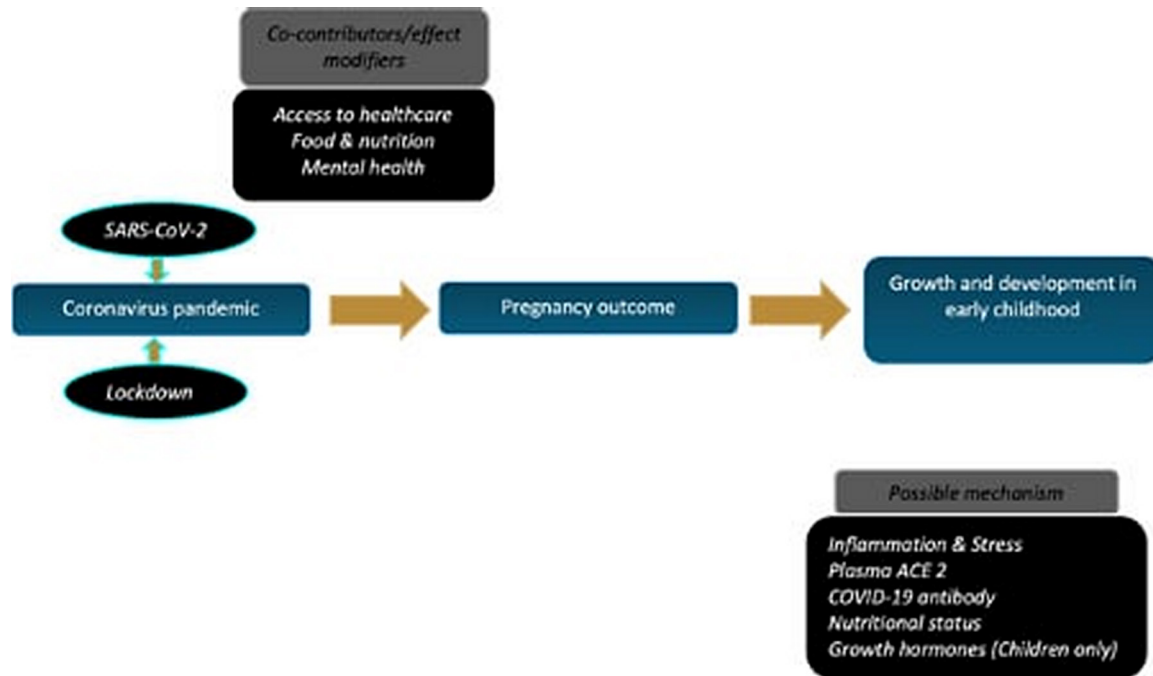


Figure 1 A conceptual framework of the study. The study will investigate the impact of the pandemic (including independently SARS-CoV-2 infection and public lockdown) on pregnancy outcomes and growth and development in early childhood. In addition, the impact of the pandemic on access to healthcare, food and nutrition and mental health in the women and their role, as co-contributor/effect modifiers, in pregnancy and childhood outcomes will be investigated. Furthermore, the study will evaluate possible explanations of the underlying mechanisms through investigation of biomarkers involved in inflammation, stress, plasma ACE2, nutritional status, etc, in mothers and children.

to decide on participation. Informed consent will be obtained through fingerprint or signature, and women who cannot read or write (illiterate) will require the presence of an impartial witness during the consenting process, who must countersign the consent form. In addition, a control group comprising of women who tested negative for SARS-CoV-2 during pregnancy will be recruited alongside the cases. Case and controls will be matched for age and sex of the child, and address (location). Dyads (mother–baby) recruited into the study will be assigned a unique study identification number which will be used in all future analyses.

Data and sample collection

Maternal questionnaire

At enrolment, a structured questionnaire will be used to investigate the impact of COVID-19 pandemic on access to food, nutrition, healthcare, morbidity and mental health of women during pregnancy (see online supplemental file). It will include questions on the participant's socioeconomic and health status, including marital status, ethnicity, caste, household size, level of education, employment, sources of income, household water sources, energy type, material possessions, and whether they currently have or had been diagnosed with diseases such as diabetes, hypertension, stroke or cancer.

A non-quantitative Food Frequency Questionnaire will be used to explore dietary habits of the women during the pandemic. Participants' usual dietary intake of foods (including staple foods) and sources of these foods will be

investigated. We will determine whether the availability, accessibility, affordability and consumption of the foods have changed during the pandemic. Where changes in dietary habits due to the pandemic are reported, prompts will be asked to establish the extent of the changes. For example, if the affordability of basic foods increases, we will ask how much the increment was, and if changes in food consumption are reported, we will find out whether the changes only relate to the quantity of foods/meals consumed or whether the usual foods/diets were substituted for other foods to facilitate satiety and nutrition.

Participants will be asked whether they visited antenatal clinics during pregnancy, and whether access to the clinics and/or services provided by the clinics was disrupted by the pandemic. Questions will be asked about reasons for non-attendance of antenatal clinics. Where antenatal services were provided during the pandemic, we will explore the level of care received and whether it matches the standard antenatal care in India. Furthermore, participants will be asked whether they have received counselling on COVID-19 during pregnancy, and whether the counselling has helped them understand the disease, its impact on pregnancy, vaccination and misinformation.

The impact of the pandemic on maternal mental health will also be investigated. A qualitative questionnaire will be developed and validated in the population (non-study participants) prior to its use. The questionnaire will ask mothers about the impact of the pandemic

**Table 1** Assessments to be conducted in mothers and children at enrolment and follow-up visits

Timeline	Mother	Child
Enrolment	<i>Questionnaire:</i> household conditions	<i>Questionnaire:</i> breastfeeding practice
	<i>Questionnaire:</i> health and nutrition during pregnancy*	<i>Anthropometry:</i> weight, length, MUAC, head circumference, etc
	<i>Anthropometry:</i> weight, height, MUAC and BMI	<i>Questionnaires:</i> cognition (HOME, CREDI, OX-NDA)
	<i>Health records:</i> SARS-CoV-2 test, date, variant, vaccination status*	<i>Blood:</i> Fe, Zn, Ca, Vit A/D, IGF-1, IGF-2, IGFBP3, CRP, AGP, IL-1, IL-6, IL-10, TNF-alpha, ACE2, TMPRSS2, serotonin, tryptophan, SARS-CoV-2 antibody
	<i>Blood:</i> Fe, Zn, Ca, Vit A/D, IGF-1, IGF-2, IGFBP3, CRP, AGP, IL-1, IL-6, IL-10, TNF-alpha, ACE2, TMPRSS2, serotonin, tryptophan, SARS-CoV-2 antibody	<i>Diet:</i> usual dietary intake using 2 non-consecutive 24HDR
6/12/18-month visits	<i>Diet:</i> usual dietary intake using 2 non-consecutive 24HDR	<i>Questionnaire:</i> health and morbidity
		<i>Health records:</i> birth outcomes (preterm, SGA, LBW, etc)*
	<i>Questionnaire:</i> health and morbidity	<i>Questionnaire:</i> breastfeeding practice
	<i>Diet:</i> usual dietary intake using 2 non-consecutive 24HDR	<i>Anthropometry:</i> weight, length, MUAC, head circumference, etc
		<i>Questionnaires:</i> cognition (HOME, CREDI, OX-NDA)
		<i>Blood:</i> Fe, Zn, Ca, Vit A/D, IGF-1, IGF-2, IGFBP3, CRP, AGP, IL-1, IL-6, IL-10, TNF-alpha, ACE2, TMPRSS2, serotonin, tryptophan, SARS-CoV-2 antibody
		<i>Diet:</i> usual dietary intake using 2 non-consecutive 24HDR

Blood samples will be collected only at enrolment and 6-month visits.
 *These are mostly retrospective data. The data will be obtained through antenatal cards, hospital records and verbal interviews with the mothers.
 AGP, alpha-1-acid glycoprotein; BMI, body mass index; Ca, calcium; CREDI, Caregiver Reported Early Development Instrument; CRP, C reactive protein; Fe, iron; 24HDR, 24-hour dietary recall; HOME, Home Observation for Measurement of the Environment; IGF, insulin-like growth factor; IGFBP3, insulin-like growth factor binding proteins-3; IL, interleukin; LBW, low birth weight; MUAC, mid-upper arm circumference; OX-NDA, Oxford Neurodevelopment Assessment; SGA, small-for-gestational age; TMPRSS2, transmembrane protease, serine 2; TNF, tumour necrosis factor; Zn, zinc.

during pregnancy on components of their mental health including stress, anxiety, fatigue, depression and insomnia. We will further investigate the risk factors to the mental health of the women during the pandemic, whether it was related to bereavement, isolation, lockdown, worry/fear of getting infected with COVID-19, fear of losing their unborn child, fear of dying, fear of losing a family member, fear of not having enough food, loss of income and inability to attend antenatal clinics. Women can give as many self-reported underlying risk factors as applicable, but we will seek to establish their top three risk factors.

Pregnancy/birth outcome

Antenatal cards, hospital records and interviews will be used to collect data on pregnancy outcomes such as pre-eclampsia, gestational diabetes, gestational age, preterm birth, congenital deformities and delivery type (vaginal-natural or artificially induced labour, and caesarean section). In addition, health records of neonatal

outcomes such as birth weight, placenta weight, infant length, head circumference and MUAC will be collected.

Breastfeeding practice

At enrolment, a questionnaire will be used to explore whether breastfeeding practices during the pandemic might have differ from standard practice. The women will be asked whether early initiation of breast feeding (usually within 1 hour of birth of the baby to benefit from colostrum breastmilk) was conducted soon after the birth of the baby. Mothers will be asked whether the baby is currently breast feeding, and if not, when was the baby weaned and age when complementary feeds including drinks and/or water were introduced. This questionnaire will provide understanding of the behaviours around adherence to common breastfeeding practices such as exclusive breast feeding under 6 months, continued breast feeding at 1 year, and the stage of introduction of solid, semisolid, and soft food.

Biochemical analyses

Biomarkers of inflammation (C reactive protein (CRP), alpha-1-acid glycoprotein (AGP), interleukin (IL)-1, IL-6, IL-10 and tumour necrosis factor (TNF)-alpha), growth (insulin-like growth factor (IGF)-1, IGF-2 and insulin-like growth factor binding proteins-3 (IGFBP3)), nutrition (ferritin, calcium, vitamin A, vitamin D and zinc), SARS-CoV-2 receptor proteins (ACE2, TMPRSS2) and COVID-19 antibody will be investigated in mothers and children. These biomarkers will facilitate understanding of the long-term/residual effect of the pandemic on critical physiology, susceptibility to the virus and inter/cou-teraction between the physiological markers (including between nutrients, vitamin D, zinc, iron and markers of SARS-CoV-2 entry into host cell/severity such as ACE2 and TMPRSS2).

A nurse trained in phlebotomy will collect 5 mL of venous blood samples from the children at enrolment and at 6-month follow-up visit, and 10 mL of blood sample from the mothers at enrolment only. The samples will be used to estimate nutritional status (iron, zinc, calcium, vitamins A and D), growth factors (IGF-1, IGF-2, IGFBP-3), inflammation markers (CRP, AGP, cytokines (IL-1, IL-6, IL-10, TNF-alpha)) and markers related to COVID-19 susceptibility (ACE2, TMPRSS2, tryptophan, serotonin) and COVID-19 antibody.

Anthropometry

Growth of children will be assessed through anthropometric measurements of weight, length, knee-to-heel length, head circumference, MUAC and skin fold thickness (biceps, triceps and subscapular) at enrolment and follow-up visits. All measurements will be conducted using equipment that is regularly calibrated. Measurements will be conducted in triplicate. The measurements will be used to determine Z-scores using the WHO Growth Standards for LAZ, WLZ, triceps-for-age and subscapular-for-age, and to classify the children as stunted or not stunted (LAZ <-2 SD) and wasted or not wasted (WLZ <-2 SD). The linear growth rate of children will also be determined.

In addition, the height, weight and MUAC of mothers will be measured only at enrolment and BMI (body mass index) calculated. Where possible, secondary data on weights of the women during pregnancy will be recorded.

Neurocognitive development

Age-appropriate measurements will be used to investigate the impact of the pandemic on cognitive, motor, language, emotional and social development of children. Three methods will be used to measure both the environment in which childhood development is taking place and the development itself (see online supplemental file).

Home Observation for Measurement of the Environment (HOME)¹⁵ will be used to assess the developmental environment at both visits. HOME assesses the emotional support and cognitive stimulation children receive

through their home environment, planned events and family surroundings. HOME contains both observational (by an assessor) and parent/caregiver-reported questionnaire items. The observational items of the assessment cover domains such as the quality of parent-child interactions, cleanliness and order of the home, and distinct features of the dwelling. Self-report items for parents include questions about their child's activities over the past days or weeks, discipline and parent-child interactions.

Caregiver Reported Early Development Instrument (CREDI)¹⁶ and Oxford Neurodevelopment Assessment (OX-NDA)¹⁷ for infants will be used to assess early childhood neurocognitive development. CREDI measures development in five inter-related domains (motor, language, cognition, socioemotional and mental health). CREDI will be administered by assessors to parents/caregivers to report milestones and behaviours that are easy for caregivers to understand, observe and describe. OX-NDA measures several areas of development including cognition, fine and gross motor skills, expressive and receptive language, behaviour (positive, negative and global), executive function, empathy, problem-solving, attention and socioemotional reactivity. OX-NDA assessment consists mainly of observation items which will be completed primarily by an assessor with some questions completed by the parent/caregiver.

Dietary assessment

Multipass, quantitative 24-hour dietary recall method will be used to estimate the food and nutrient intake of mothers and children at enrolment and follow-up visits. Staff trained in the multipass method will visit the homes of participants to complete the dietary questionnaire. The dietary intake of mothers and children will be assessed separately. A dietary application will be used to enter recalls of all the foods and drinks mothers and children consumed in the preceding 24 hours. Food portion sizes will be estimated using real foods/food models whenever feasible, photo album, cost equivalent or number (discrete commercial food such as biscuits) or size (small, medium, large). Food intake data will be translated into intake of energy and nutrients using the Indian food composition table.¹⁸

Health and morbidity questionnaire

A health and morbidity assessment questionnaire will be used to investigate the burden of disease in mothers and children. At enrolment and follow-up visits, mothers will be asked whether she or her child has had any illness over the last preceding months, and if any medication was administered due to the illness. In case of a hospital admission, information on diagnosis and treatments received while at hospital will be collected. In addition, records of childhood vaccination the children have received will be collected.

Analysis plan

Sample size calculations were based on LAZ at 18 months of childhood and conducted using STATA with

the command ‘power two means $-1.5 -2.0$, $SD1(1.5)$ $SD2(1.5)$ power (0.8) alpha (0.05)’. The power of the study and the significance level were set at 80% and 5%, respectively. Mean LAZ in children born to non-infected women was assumed to be -1.5 and we were interested in assessing a minimum difference of 0.5 in LAZ between children in the infected and uninfected groups. The SD of LAZ in both groups was assumed to be 1.5. After considering an attrition rate of 20%, the final sample size was calculated at 712 (ie, 356 participants per group).

Characteristics of pregnant women at the time of recruitment will be summarised and presented by cohort. The summaries will include medians and IQRs in the case of continuous variables, and the number of individuals per category and their percentages in the case of categorical variables. The WHO R package (anthro)¹⁹ will be used to calculate LAZ and WLZ at enrolment and at 6-month follow-up. The analyses will be carried out in R using a Bayesian framework by means of JAGS²⁰ or Stan.²¹ Predictor variables will be standardised to facilitate model convergence and the selection of prior distributions. The parameters’ posterior distributions, mean and 95% credible intervals will be computed and compared. Models will be compared with tools such as the Deviance Information Criterion and their Widely Applicable Information Criterion.

Generalised linear mixed models (GLMMs) will be used to evaluate the impact of COVID-19 on children’s quantitative outcome variables. GLMMs can account for repeated measures per child over time, by modelling children as random effects. COVID-19 infection status during pregnancy will be modelled as an index variable. Adjusted and unadjusted models will be derived. The latter will include sex of child and study site. Furthermore, the effect of other covariates on children’s outcome variables will be investigated by means of univariate and multivariate regression modelling. These covariates include household socioeconomic status, maternal level of education, age, height, weight, parity, as well as selected indicators of access to healthcare, food and nutrition, and mental health.

In addition, index variables will be included in the analysis to independently evaluate the impact of SARS-CoV-2 infection and lockdown during pregnancy on outcomes in childhood. The index variables can take four possible values depending on whether the pregnant woman was COVID-19 positive (c+) or negative (c-) and whether she was exposed (m+) or not (m-) to lockdown during pregnancy: c+m+, c+m-, c-m+, c-m-. Comparisons (ie, contrasts) of the posterior distributions for each of the four cases will enable us to assess the effect associated with each combination of exposures.

Furthermore, generalised mixed models will be used to evaluate the impact of COVID-19 infection on the women’s biochemical measurements. These models will be adjusted by gestational age, maternal age, BMI, etc. COVID-19 infection status during pregnancy will be modelled as an index variable. The impact of COVID-19

on birth/pregnancy outcomes will be assessed by means of logistic regression.

Patient and public partnership strategy

The study proposal was devised by stakeholders in India including regional government, hospital and public health officials. A range of community engagement meetings will take place before the recruitment of study participants to inform the communities about the study and its potential impact. The meetings will also provide an avenue to address any concerns or questions regarding the study protocol. Study participants and the public will be involved in the dissemination of the study’s findings through community discussion or engagement events.

Author affiliations

¹Department of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, London, UK

²Department of Epidemiology, Indian Institute of Public Health, Gandhinagar, India

³Clinical Division, ICMR-National Institute of Nutrition, Hyderabad, India

⁴Clinical Division, National Institute of Nutrition, Hyderabad, India

⁵Maternal and Child Health and Nutrition, National Institute of Nutrition, Hyderabad, India

⁶Department of Pathobiology and Population Sciences, University of London, London, UK

⁷Faculty of Children and Learning, University of London Institute of Education, London, UK

⁸Faculty of Children and Health, University of London Institute of Education, London, UK

⁹Department of Population Health, London School of Hygiene and Tropical Medicine, London, UK

¹⁰Department of Pathobiology and Population Sciences, London International Development Centre, London, UK

Twitter Modou Lamin Jobarteh @DrMoJobs

Contributors The author’s contributions to writing the manuscript were as follows: MLJ wrote the first draft and was responsible for compiling the content of the manuscript for submission. CH, DBS and BK developed the concept of the study. MLJ, CH, DBS, BK, KS, PAS, JD, CA and SKB contributed to writing the original study protocol which forms the basis of this manuscript. MC, KS, TD, DPP, FM and RM contributed to development of the protocol and editing the manuscript. HD-K and EF developed the methods for anthropometry and dietary intake assessment and contributed to writing the manuscript. BC-U and MLJ developed and wrote the analysis plan. All authors contributed to the review of the manuscript for publication.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Parental/guardian consent obtained.

Ethics approval Approval for the study was obtained from the ethics committees of the State Health System Resource Centre, Gandhinagar, Gujarat, India (reference no: SHSRC/2021/2185), Indian Council of Medical Research (ICMR), National Institution of Nutrition, Hyderabad, India (reference no: EC/NEW/INST/2021/1206) and the ethics committee of London School of Hygiene and Tropical Medicine (reference no: 72848). The results of the study will be disseminated through public engagement meetings, presentation at conferences, seminars, meetings and publication in peer-reviewed, open-access journal. The results will also be deposited on an open-access data repository.

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ORCID iDs

Modou Lamin Jobarteh <http://orcid.org/0000-0002-7350-6980>

Santosh Kumar Banjara <http://orcid.org/0000-0002-0893-9552>

Priyanka Akshay Shah <http://orcid.org/0000-0001-9970-6086>

Farjana Memon <http://orcid.org/0000-0003-3960-7929>

Dharani Pratyusha Palepu <http://orcid.org/0000-0003-1692-020X>

Hilary Davies-Kershaw <http://orcid.org/0000-0002-2044-2469>

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Longitudinal follow-up of babies born to covid-19 positive antenatal mothers in Gujarat -Maternal

Basic Details

Question	Responses	Remarks
Name of District	1. Ahmedabad 2. Sabarkantha	
Mother UID	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Status of Covid infection during Pregnancy	0. Negative 1. Positive	
Date of Interview		
GPS location		
Name of data collector:		

Section 1: Socio-demographic details

No	Question	Response	Instruction
1	Mother's s Birth date	DOB_____	Record verbal age if participants do not remember the birth date
2	Father's s Birth date	DOB_____	Record verbal age if participants do not remember the birth date
3	Religion	1. Hindu 2. Islam 3. Christian 4. Others _____	
4	Caste	1. SC 2. ST 3. OBC 4. General	
5	Education	1. Illiterate 2. Can read and write 3. Primary 4. Secondary 5. Higher Secondary 6. Graduation 7. Postgraduation& above	
6	What type of Ration card do you have?	1. APL (white) 2. BPL (yellow) 3. Not any 4. Not aware/don't know	
7	Occupation	1. Farmer 2. Labourer 3. Business 4. Job 5. Housewife 6. Any other	
8	What is your family type?	1. Joint 2. Nuclear	
9	Total Number of family members in HH (including you)	.	

No	Question	Response	Instruction
10	List all family members with their age and relation to participants in detail.	_____	
11	Status of current Housing	<ol style="list-style-type: none"> 1. Own 2. Rented 3. Living with relatives/friends 4. Other 	
12	Type of house (current)	<ol style="list-style-type: none"> 0. No House/rented 1. Hut 2. Kuccha House (walls/floors made from mud, roof made from leaves or other low-quality materials) 3. Semi-pucca House (Partly low quality and partly high-quality material used) 4. Pucca House (High-quality materials used including roof, walls, floor) 5. Mansion 	
13	Was the status and type of housing being same during covid pandemic?	<ol style="list-style-type: none"> 0. No 1. Yes 	<i>If yes, jump to the Q:15</i>
14	If no, record the difference in terms of both (Type & status)	_____	
15	Household fuel source (current)	<ol style="list-style-type: none"> 1. Electricity (Government/state grid) 2. Generator (Public/personal) 3. Kerosine 4. Others (specify) 	
16	Was the HH fuel source was same during covid pandemic?	<ol style="list-style-type: none"> 0. No 1. Yes 	<i>If yes, jump to the Q:18</i>
17	If No, record the difference in details.	_____	
18	Cooking fuel source (current)	<ol style="list-style-type: none"> 1. LPG 2. Wood/straw 3. Animal waste 4. Coal/Charcoal 5. Kerosine 6. Others (specify) 	
19	Was the Cooking fuel source being same during the pandemic?	<ol style="list-style-type: none"> 0. No 1. Yes 	<i>If yes, jump to the Q:14</i>
20	If no, record the difference in details.	_____	
21	Material Possession	<ol style="list-style-type: none"> 1. Livestock (Cow, Sheep, Chicken, etc.) 2. Fridge 3. TV 4. Vehicle (car, motorcycle, etc.) 5. Broadband internet 6. Others_____ 7. Not any_____ 	
22	What is the primary source of water for your Household usage?	<ol style="list-style-type: none"> 1. Piped water into dwelling 2. Piped water into the yard/plot 3. Piped to neighbour 4. Public-tap/standpipe 	

No	Question	Response	Instruction
		5. Tube-well/borehole 6. Dug well 7. Water from spring 8. Rain water 9. Water-vendor -tanker truck/cart delivery 10. Open water source (e.g. River, lake, stream, canal) 11. Other (specify)	
23	Do you have the same source of drinking water as HH?	0. No 1. Yes	<i>If yes, jump to the Q:25</i>
24	If not the same, please specify. (Write option number from Q:22)		
25	Do you have to walk/travel to get household/drinking water?	0. No 1. Yes	<i>If NO, jump to the Q:27</i>
26	If Yes, Distance travelled the closest source of water?		
27	Do you have a toilet facility in your house?	0. No 1. Yes	<i>If NO, jump to the Q:29</i>
28	If yes, what type of toilet	1. Toilet with water flush or pour-flush 2. Ventilated improved pit (VIP) latrine 3. Pit latrine with slab 4. Pit latrine without slab/open pit 5. Twin pit/composting toilet	
29	Since how long are you staying in this house with these amenities?	No of months_____	
30	Were these house amenities being same (water source + Toilet facilities _ material passion) during the pandemic?	0. No 1. Yes	<i>If yes, end the Section here</i>
31	If no, record the details for each of the three parameters	_____	

Section 2: Household Income details

No	Question	Response	Instruction
32	Are you involved in any paid work?	0. No 1. Yes	<i>If no jump to the Q:38</i>
33	if yes, state the type of work.	_____	
34	Do you commute to work?	0. No 1. Yes	<i>If no, jump to the Q:36.</i>
35	If yes, state the travel distance and the transportation type used.	_____	
36	How much are you paid per month? State the amount, if possible. If not, please give us a close estimation.		
37	Since how many years have you been involved with this work?		
38	Is your husband involved in any paid work?	0. No 1. Yes	<i>If no, jump to the Q:44.</i>
39	If yes, state the type of work.	_____	
40	Does he commute to work?	0. No 1. Yes	<i>If no, jump to the Q:42.</i>

No	Question	Response	Instruction
41	If yes, state the distance of travel and the type of transportation used.		
42	How much does he earn per month? State the amount if possible. If not, please give an estimation.		Please use 9 if the information is not known or refused.
43	Since how many years has, he been involved in this same job with the same travelling options?		
44	Does anyone else work in your household?	0. No 1. Yes	If No, end sect. 2 here
45	If yes, state your relationship (daughter, son, cousin, uncle, etc.) and the type of work.	1. Type of work_____ 2. Relationship with you____	
46	Do they commute to work?	0. No 1. Yes	
47	If yes, state distance of travel and type of transportation.		
48	How much do they earn? State the amount if possible. If not please estimate.		Please use 9 in the data entry if the information is not known/refused.
49	How much have your total household income each month? State amount if known.		If not please estimate. Please use 9 in the data entry if the information is refused.
50	Do you have other sources of income (such as gifts, remittance, inheritance, etc.)	0. No 1. Yes	
51	Does the covid-19 pandemic affect your household income?	0. No 1. Yes	
52	Whose income was affected in the household?	1. Self 2. Husband 3. Son 4. Daughter 5. Uncle 6. Any other	
53	How was the income affected?	1. Lost job totally 2. lost some earnings 3. Other	
54	On average, how much earnings would you say your household has lost during the pandemic? State amount. If not, please estimate.		

Section 3: Current anthropometry, morbidity and addiction details

No	Question	Response	Instruction
55	Are you currently pregnant?	0. No 1. Yes	
56	Are you currently breastfeeding?	0. No 1. Yes	
57	Are you suffering from any of the listed diseases? (current)	1. Not any 2. Diabetes 3. Hypertension	Multiple answers possible

No	Question	Response	Instruction
		4. Cardiac disease 5. Thyroid 6. Chronic respiratory diseases 7. Immune-compromised status 8. Any other_____	
58	Were you suffering from any of the listed diseases during your pregnancy (please consider the pregnancy during the pandemic)?	1. Not any 2. Diabetes 3. Hypertension 4. Cardiac disease 5. Thyroid 6. Chronic respiratory diseases 7. Immune-compromised status 8. Any other____	Multiple answers possible – please consider the during the pandemic pregnancy
59	Do you have any infection/illness within the past seven days?	0. No 1. Yes	
60	If yes, record the details.	_____	
61	Do you currently have any addiction to any of the listed items?	1. Not any 2. Cigarette/bidi smoking 3. Tobacco chewing 4. Alcohol 5. Any other	
62	If any other, record the details about the item's name with frequency/day.	_____	
63	If the response is except "not any", then record the frequency/day for each type of received response.	_____	
64	Did you have any addiction during pregnancy from the listed items?	1. Not any 2. Cigarette/bidi smoking 3. Tobacco chewing 4. Alcohol 5. Any other	
65	If any other, record the details about the item's name with frequency/day.		
66	If the response is except "not any", then record the frequency/day for each type of received response.		
67	Any other history of hospitalization (mother) till date?	1. No 2. Yes	
68	If yes, record the reason & no of days		

No	Question	Response	Instruction
69	Weight in kg during pregnancy (Recorded)	_____ kg	
70	Level of Hb during pregnancy (Recorded)		
71	Level of RBS during pregnancy (Recorded)		
72	BP during pregnancy (Recorded)		
73	Maternal current weight in kg		
74	Weight on the date of the interview		Current anthropometry will be taken on every follow-up visits
75	Height in cm	_____ cm	
76	Maternal MUAC on the date of the interview	_____ cm	
77	Skin fold thickness - Triceps on the date of the interview	_____ mm	
78	Skin fold thickness - Biceps on the date of the interview	_____ mm	
79	Skin fold thickness - Scapula on the date of the interview	_____ mm	
80	Skin fold thickness - Supra iliac on the date of the interview	_____ mm	
81	Waist circumference (in cm) on the date of the interview	_____ cm	
82	Hip Circumference (in cm) on the date of the interview	_____ cm	

Section 4: Covid Infection Prevention and vaccination details

No	Question	Response	Instruction
83	Have you followed any of the following covid-infection preventive measures strictly and regularly?	<ol style="list-style-type: none"> 1. Face mask wearing 2. Handwashing 3. Use of hand sanitizer frequently 4. Social distancing (Avoiding all general social gatherings) 5. Staying away from infected or suspected patients 6. Not any 7. Any other 	<i>Multi response. If Ans: is not any, then jump to 85</i>
84	If yes, specify the duration	<ol style="list-style-type: none"> 1. During all three waves of pandemic 2. During Covid-infection only 3. Only if anyone infected in family/close contact 4. Not Followed 	
85	Have you taken any of the following Prophylactic drugs and dietary supplements to prevent from Covid pandemic	<ol style="list-style-type: none"> 1. Vitamin C 2. Vitamin D 3. Zink 4. Ayurvedic homemade Gadha 5. All of the above 6. Not any 7. Others 	<i>Multi response. If Ans: is not any, then jump to 87</i>
86	If yes, specify the duration (no of weeks) and Dosage.		
87	Status of during pregnancy	<ol style="list-style-type: none"> 1. Not vaccinated 2. One dose 3. Two doses 4. Two doses + precautionary 	

88	Status of covid vaccination on the date of interview (current)	5. Not vaccinated 6. One dose 7. Two doses 8. Two doses + precautionary	
89	Date & Type of the first vaccine	1. Date _____ 2. Type _____	
90	Date & Type of the second vaccine	1. Date _____ 2. Type _____	
91	Date & Type of Precautionary Vaccine	1. Date _____ 2. Type _____	
92	Did you receive covid-19 counselling during pregnancy?	1. No 2. Yes 3. Not applicable (no guideline introduced at that time)	<i>If Ans: is no any, then end the sec:3 here</i>
93	if yes, where did you receive the counselling?	1. Any Hospital settings (PHC/CHC/SC/private clinic) 2. Mamta day 3. Mass media (radio, tv,) 4. Family/friends 5. Other (write)	
94	If yes, did the counselling help you to understand the covid-19 disease, vaccination, misinformation, and its impact on your pregnancy and baby?	1. Yes – It was helped me to develop good understanding 2. yes – in somewhat aspects 3. yes – little bit but still I have/had many doubts 4. Others	

Section 5: Status of Covid Infection during pregnancy and Management details

No	Question	Response	Instruction												
95	Have you been tested positive for COVID 19 during your pregnancy?	0. No 1. Yes													
96	If yes, during which wave it was detected?	1. 1.1 st wave- (March 2020 to November 2020) 2. 2.2 nd wave- (February 2021 to June 2021) 3. 3.3 rd wave- (November 2021 to March 2022)	Skip Q:96 to 117 if the answer of ques. 95 is No												
97	If yes, record the performed confirmatory investigations and result	<table border="1"> <thead> <tr> <th>Test done</th> <th>Result (0/1)</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>RAT</td> <td></td> <td></td> </tr> <tr> <td>RTPCR</td> <td></td> <td></td> </tr> <tr> <td>others</td> <td></td> <td></td> </tr> </tbody> </table>	Test done	Result (0/1)	Date	RAT			RTPCR			others			
Test done	Result (0/1)	Date													
RAT															
RTPCR															
others															
98	If yes, in which trimester of pregnancy?	_____month	The First Trimester – (0-13 weeks) The Second Trimester –(14-26weeks) Third Trimester (27-40)												
99	If yes, record the experienced symptoms	1. No symptoms 2. Mild Fever 3. High grade fever 4. Cough 5. Cold 6. Headache 7. Myalgia 8. Diarrhea 9. Breathlessness 10. Loss of test/ smell 11. Any other: _____													

No	Question	Response	Instruction
100	Mode of treatment during covid	1. Home isolation 2. Hospitalization 3. ICU care 4. Any other_____	
101	If home Isolation, no of days	-----Days	Skip Q:101 if the ans. Of Q:100 is other than home isolation
102	If hospitalized, no of days	-----Days	Skip Q:102 if the ans. Of Q:100 is other than hospitalization
103	If admitted to ICU, no of days	-----Days	Skip Q:103 if the ans. Of Q:100 is other than ICU care
104	Level of SPO2	_____	
105	H/O oxygen support	0. No 1. Yes 2. NA	
106	If yes, no of days	_____	Skip Q:106 if the ans. Of Q:105 is other than yes
107	H/O Steroid during covid treatment	0. No 1. Yes	
108	H/O Ventilator during covid treatment	0. No 1. Yes	
109	Type of facility for covid treatment	1. Public facility 2. Private facility – Physician 3. Private facility -BAMS/BHMS 4. Trust hospital 5. Self-medication 6. Any other_____	
110	Latest prescription or pharmacy bill of COVID treatment (Take picture/Choose image)		
111	lab report details	1. Not performed any 2. CRP 3. D-Dimer 4. HB 5. ACE-2 6. IL-6 7. Any Other_____ 8. Performed but not having any record	Take maximum – min value
112	If performed any, record the details for each with min two values (max, min) and the date		Skip Q:112 if the ans. Of Q:111 is opt. 8 & 1
113	Have you taken any medication after recovering from covid? (Covid follow-up RX and name of the medicine)	0. No 1. Yes	
114	If yes, record the detail of the treatment	_____	Skip Q:114 if the ans. Of Q:113 is No
115	Have you experienced any pregnancy-related complications during/after covid treatment?	0. No 1. Yes	
116	If yes, name the complication.		Skip Q:116-40 if the ans. Of Q:115 is No

No	Question	Response	Instruction
117	If yes, how did you manage this complication?	<ol style="list-style-type: none"> 1. Hospitalized 2. Consulted doctor 3. Self-medications 4. Any other 	Skip Q:117-40 if the ans. Of Q:115 is No
118	Remarks	_____	

Section 6: Reproductive History (previous) & health care access during pregnancy (consider pandemic pregnancy)

No	Question	Answer	Instruction
119	Status of Gravida	<ol style="list-style-type: none"> 1. Nulliparous 2. Multi para 	
120	Record the details (in numbers) of	<ol style="list-style-type: none"> 1. Gravida____ 2. Parity____ 3. Abortion ____ 4. Live births____ 5. Pre-term birth_____ 	
121	Status of (Covid pandemic pregnancy) on the date of interview	<ol style="list-style-type: none"> 1. Delivered 2. Yet to deliver 	
122	Date of LMP	_____(dd/mm/year)	
123	Date of EDD	_____(dd/mm/year)	End the tool here if baby is yet to delivered
124	If delivered, outcome of pregnancy	<ol style="list-style-type: none"> 0. Singleton 1. Twins 2. Triplet 3. Any other 	
125	How many ANC visit you have completed?	<ol style="list-style-type: none"> 1. Less than 4 2. Minimum 4 as per national guideline 3. More than 4 	
126	Record the reasons if less than 4	_____	
127	Record the reasons if more than 4		
128	What services did you receive at the ANC?	<ol style="list-style-type: none"> 1. BP check 2. Hb Check 3. Glucose check 4. Ultrasound check 5. Heart monitor 6. Urine analysis 7. Lab tasting 8. Anthropometry 9. Other, pls specify 0. Not any 	Multiple response is possible
129	What intervention did you receive at your ANC?	<ol style="list-style-type: none"> 1. No Intervention 2. Iron -Folic acid tablet 3. Calcium tablet 4. multi-micronutrient 5. De-worming tab 6. Counselling for birth planning 	Multiple response is possible

No	Question	Answer	Instruction
		7. Others pls specify	
130	Have you experienced any complication during pregnancy?	0. No 1. Yes	
131	If yes,	1. Frequent contraction 2. Vaginal bleeding 3. Vaginal discharge 4. Gestational diabetes 5. Gestational Hypertension 6. sudden hike of Blood pressure 7. Convulsion 8. Anaemia 9. Severe Headache 10. Any other 11. Not any	
132	Have you experienced any complication during labour?	1. Prolonged labour pain 2. Excessive vaginal bleeding 3. No cervix dilatation 4. Convulsion 5. premature rupture of membrane (PROM) 6. Hike blood pressure 7. Vaginal discharge 8. Any other _____ 9. Not any	
133	Have you experienced any complication after labour (during 42 days of delivery)?	1. Excessive vaginal bleeding 2. Fever 3. Vaginal discharge 4. Convulsion 5. Vaginal ulcer 6. Not any 7. Any other	
134	Actual Date of Delivery	_____ (dd/mm/year)	Only for mothers who have delivered
135	Place of delivery	1. Home 2. Private institution 3. Public institution 4. Trust hospital 5. Any other	
136	Type of delivery	1. Vaginal 2. C-section 3. Induced labour	
137	If C-section	1. Medical indication 2. Elective	
138	If Medical indication, record the details		
139	In which trimester/term the baby was borne?	1. Full term 2. Preterm	
140		0. No	

No	Question	Answer	Instruction
	Were you delivered at the same place (health care facility) where you received the majority of your ANC services?	1. Yes	
141	If, No Record the details (reasons, no of hospital approached and shifted)	_____	
142	Remarks		

Section:6 Maternal Mental Health during the Pandemic

No	Question	Response	Instructions
143	Do you feel the pandemic has affected your mental health?	1. No 2. Yes	
144	What impact has the pandemic had on your mental health?	<ol style="list-style-type: none"> 1. Feeling nervous, anxious, or on edge 2. Not being able to stop or control worrying/ Worrying too much about different things 3. Being so restless that it is hard to sit still 4. Becoming easily annoyed or irritable 5. Feeling afraid, as if something awful might happen 6. Difficulty falling / staying asleep 7. Inadequate / not satisfied sleep - less than 7 hours 8. Sleeping too much 9. Feeling down, depressed, or hopeless 10. Feeling tired or having little energy 11. Poor appetite or overeating 12. Feeling bad about yourself or that you are a failure or have let yourself or your family 13. Trouble concentrating on things, such as reading the newspaper or watching television. 14. Moving or speaking so slowly that other people could have noticed. Or the opposite being so get or restless that you have been moving around a lot more than usual 15. Thoughts that you would be better off dead, or of hurting yourself 16. Stressed 17. Other 	
145	If any other, record the detail	_____	
146	If feeling nervous, anxious, or on edge - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
147	If not being able to stop or control worrying - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
148	If being so restless that it is hard to sit still - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
149	If becoming easily annoyed or irritable - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
150	If feeling afraid, as if something awful might happen - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		

No	Question	Response	Instructions
151	If difficulty falling/staying asleep - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
152	If problems waking up too early / couldn't complete 7 hours sleep - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
153	If feeling down, depressed, or hopeless- rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
154	If feeling tired or having little energy - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
155	If poor appetite or overeating - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
156	If feeling bad about yourself or that you are a failure or have let yourself or your family down- rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
157	If trouble concentrating on things, such as reading the newspaper or watching television - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
158	If moving or speaking so slowly that other people could have noticed. Or the opposite being so gety or restless that you have been moving around a lot more than usual - rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
159	If thoughts that you would be better o dead, or of hurting yourself- rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
160	If stressed- rank it using Scale 1 to 5 (1 is the lowest & 5 is the highest)		
161	What do you think were the reasons your mental health was impacted during the pandemic?	<ol style="list-style-type: none"> 1. Bereavement 2. Isolation 3. loss of income 4. fear of not having enough food for your household 5. Fear of COVID-19 infection 6. Fear of losing your unborn baby 7. Fear of losing a family member 7. Inability to visit ANC/hospital 8. Other (write) 	
162	If Other, record the details		
163	Do you currently have or had any mental health disorders before the pandemic?	<ol style="list-style-type: none"> 0. No 1. Yes 	
164	If yes, record the details using prompt from above Q: what impact has the pandemic had on your mental health?	_____	
165	If yes, Record the reason for present mental health condition	_____	
166	Does anyone in your family currently have or had mental health disorder?	<ol style="list-style-type: none"> 0. No 1. Yes 	

Section:7 Current Food frequency questionnaire

No	Food items	Daily	Four times a week	Three a week	Twice a week	Once a week	Once in 15 days	Once in a month	Occasionally /seasonal	Never
[A]	Protein-rich foods									
1	Bajra									
2	Wheat flour, whole									
3	Bengal gram, dal									
4	Green gram, dal									
5	Lentil, dal									
6	Red gram, dal									
7	Soyabean, white									
8	Groundnut									
9	Egg, poultry, whole, boiled									
10	Chicken, breast									
11	Chicken, liver									
12	Salmon									
13	Tuna									
[B]	Vitamin A and Beta-carotene-rich foods									
1	Egg, poultry, whole, boiled									
2	Chicken, liver									
3	Goat, liver									
4	Amaranth, leaves									
5	Colocasia, leaves									
6	Drumstick, leaves									
7	Fenugreek leaves									
8	Spinach									
9	Mango, ripe, kesar									
10	Sweet potato, brown skin									
11	Carrot, orange									
[C]	Iron-rich foods									
1	Bengal gram, whole									
2	Cowpea, brown									
3	Lentil, dal									
4	Moth beans									
5	Peas, dry									
6	Fenugreek, leaves									
7	Drumstick, leaves									
8	Cluster beans									
9	Dates, dry, dark brown									
10	Mint leaves									
11	Gingelly seeds, white									
12	Niger seeds, black									
13	Chicken, liver									
14	Beef, liver									
[D]	Calcium-rich foods									

No	Food items	Daily	Four times a week	Three a week	Twice a week	Once a week	Once in 15 days	Once in a month	Occasionally /seasonal	Never
1	Ragi									
2	Bengal gram, whole									
3	Moth beans									
4	Rajmah, brown									
5	Soyabean, brown									
6	Red gram, whole									
7	Amaranth, leaves, green									
8	Colocasia, leaves									
9	Fenugreek, leaves									
10	Drumstick, leaves									
11	Curry leaves									
12	Mint leaves									
13	Gingelly seeds, white									
14	Paneer									
15	Khoa									

Section:8 Nutrition Access during pandemic

No	Question	Response	Instruction
167	What foods do you usually eat (i.e., usual dietary intake/staple foods)? List and describe		See the current FFQ for the details.
168	On average, how many times in a week do you eat these foods?		
169	Was there a time in the pandemic when you were not able to get these foods?	0. No 1. Yes 2. Don't know	
170	What foods were you mostly unable to get during the pandemic? List and describe		
171	How frequently were the foods not available during the pandemic?	0. Never 1. Often 2. sometimes	
172	What was the reason?	0. Poverty/low income (chronic) 1. Unemployment 2. Systemic racism and racial discrimination 3. Unavailable near by/in local market 4. Unaffordable (so expensive that people do not have enough money to buy it or pay for it) 5. Inaccessible (very difficult/impossible to get) 6. Others	Where the participant chooses all or first 3 options, ask what she think was the main reason?
173	What was the main reason?	0. Unavailable 1. Unaffordable 2. Inaccessible 3. Others, specify	Where the participant said the foods were unaffordable (i.e., prices increased), ask what the increment were.

No	Question	Response	Instruction
174	What was the price of these foods before the pandemic?		
175	What was the price of these foods during the pandemic?		
176	Was there a time you had to change your dietary habits because the foods you usually eat were unavailable, inaccessible, or too expensive?	<ol style="list-style-type: none"> 0. No 1. Yes 2. Don't know 	
177	What changes in dietary habits did you make?	<ol style="list-style-type: none"> 1. Reduced the quantity of foods I eat 2. I reduced the amount meals I eat 3. I substituted my usual foods to other types 4. I eat when I can 5. other 	
178	What foods did you eat when the foods you usually eat were not available?		
179	Were you eating a three-square meal a day (i.e., breakfast, lunch and dinner) during pregnancy?	<ol style="list-style-type: none"> 1. Yes-always 2. Yes-sometimes 3. No 	
180	What meals do you almost always (usually) eat during the pandemic?	<ol style="list-style-type: none"> 1. Breakfast, lunch, dinner 2. breakfast & lunch 3. breakfast & dinner 4. lunch & dinner 	

Longitudinal follow-up of babies born to covid-19 positive antenatal mothers in Gujarat - Children

Basic details	
Unique ID (Children)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Name of the districts	1. Ahmedabad 2. Sabarkatha
Maternal status of covid infection during pregnancy	0. No 1. Yes
Date of Interview	
Name of RA	

Section:1 Birth Outcome details

Sr.no	Questions	Response	Instructions
1	Birth date of the child	dd/mm/yyyy	
2	Age of the baby	<input type="text"/> <input type="text"/> In months	<i>verbal</i>
3	Gender	1. Male 2. Female	
4	Birth weight	_____Kg	
5	Did the baby cry immediately after birth? (recorded/maternal recall)	0. No 1. Yes	
6	Did respiration rate normal immediately after birth? (recorded/maternal recall)	0. No 1. Yes	
7	Did the baby's feeding reflexes normal immediately after birth? (recorded/maternal recall)	0. No 1. Yes	
8	Did the baby develop COVID-related symptoms (cough, cold, fever, breathlessness) within 24 hours of birth?	0. No 1. Yes 2. Don't know	
9	If yes, record the detail of whether he/she went for confirmatory investigations & if yes, mention the result	0. No 1. Yes	
10	Did the child admitted to NICU/PICU?	0. No 1. Yes	

Sr.no	Questions	Response	Instructions
11	If yes, the reason for admission		Skip Q:11 if the answer is no in Q:10.
12	Any congenital abnormality in the baby	0. No 1. Yes	
13	If yes, please specify		Skip Q:13 if the answer is no in Q:12.

Section:2 Anthropometry & Morbidity Profile

Sr.no	Question	Response	Instruction
14	Current weight in Kg	_____kg	
15	Current Height in cm	_____cm	
16	Current MUAC in cm	_____cm	
17	Head circumference in Cm	_____cm	
18	Does the child have any infection within the past seven days?	0. No 1. Yes	
19	If yes, record the details.		
20	Present status of 1 st baby	0. Alive and healthy 1. Alive with some health issue 2. Dead	
21	Specify the condition if alive with some health issue (1st baby).	_____	Skip Q:21 if answer 20 is other than opt.1
22	Any other major health complications to the baby after birth?	1. No 2. Yes	
23	If yes, record the details.	_____	
24	Any other H/O hospitalization to date?	0. No 1. Yes	
25	If yes cause of hospitalization	_____	Skip Q:25 if the answer is no in Q:24.

Section:2 IYCF Practice & Immunization details

Sr.no	Question	Response	Instructions
26	Initiation of breastfeeding?	<ol style="list-style-type: none"> 1. within an hour of birth 2. within 2-4 hours of birth 3. Within 24 hours of birth 4. After one day 5. Within three days 6. any Other_____ 	
27	Did the baby receive the first yellowish breast milk which came out after birth?		
28	Till what age baby was given only breastmilk?	_____months	
29	Age eligibility for immunization on the date of the 1 st interview	<ol style="list-style-type: none"> 1. less than six weeks 2. 6 weeks 3. 10 weeks 4. 14 weeks 5. 9-12 months 6. 16 -24 month 	
30	If the child's age is less than six weeks	<ol style="list-style-type: none"> 1. BCG 2. OPV-0 3. Hepatitis birth dose 4. Not any 	Multi response
31	If the child's age is up to 6 weeks	<ol style="list-style-type: none"> 1. BCG 2. OPV-0 3. Hepatitis birth dose 4. OPV-1 5. PENTAVALENT-1 6. FIPV-1 7. ROTA-1 8. PCV-1 9. Not any 	Multi response
32	If the child's age is up to 10 weeks	<ol style="list-style-type: none"> 1. BCG 2. OPV-0 3. Hepatitis birth dose 4. OPV-1 5. PENTAVALENT-1 6. FIPV-1 7. ROTA-1 8. PCV-1 9. OPV-2 10. PENTAVALENT-2 11. ROTA-2 12. Not any 	Multi response

Sr.no	Question	Response	Instructions
33	If the child's age is up to 14 weeks	<ol style="list-style-type: none"> 1. BCG 2. OPV-0 3. Hepatitis birth dose 4. OPV-1 5. PENTAVALENT-1 6. FIPV-1 7. ROTA-1 8. PCV-1 9. OPV-2 10. PENTAVALENT-2 11. ROTA-2 12. OPV-3 13. PENTAVALENT-3 14. FIPV-2 15. ROTA-3 16. PCV-2 17. Not any 	Multi response
34	If the child's age is up to 9 - 12 months	<ol style="list-style-type: none"> 1. BCG 2. OPV-0 3. Hepatitis birth dose 4. OPV-1 5. PENTAVALENT-1 6. FIPV-1 7. ROTA-1 8. PCV-1 9. OPV-2 10. PENTAVALENT-2 11. ROTA-2 12. OPV-3 13. PENTAVALENT-3 14. FIPV-2 15. ROTA-3 16. PCV-2 17. MR-1 18. PCV-BOOSTER 19. Not any 	Multi response

Sr.no	Question	Response	Instructions
35	If the child's age is up to 16-24 months	20. BCG 21. OPV-0 22. Hepatitis birth dose 23. OPV-1 24. PENTAVALENT-1 25. FIPV-1 26. ROTA-1 27. PCV-1 28. OPV-2 29. PENTAVALENT-2 30. ROTA-2 31. OPV-3 32. PENTAVALENT-3 33. FIPV-2 34. ROTA-3 35. PCV-2 36. MR-1 37. PCV-BOOSTER 38. MR-2 39. 2. OPV-BOOSTER 40. Not any	
36	Age eligibility for Vaccination during a follow-up visit (FU)	1. less than nine months 2. 9-12 months - Full Immunization 3. 13 -24 months - Complete immunization	
37	Status of immunization for less than nine months (FU)	1. Received all eligible vaccines with the alignment of the national immunization schedule 2. Received but not as per schedule 3. Not received all eligible vaccine 4. Record not found	PCV is applicable to children born after 20 th October 2021 in Gujarat; PCV was introduced on 20 th October 2021
38	If received but not as per schedule, record the reasons. (1 FU)	_____	
39	If not received all eligible vaccines/missing some, record the reasons. (FU)		
40	Status of immunization for 9-12 months (a child is eligible for Full Immunization) (1 st FU)	1. Received all eligible vaccines with the alignment of the national immunization schedule 2. Received but not as per schedule 3. Not received all eligible vaccine 4. Record not found	Full Immunization: One dose of BCG, Measles/MR/MMR, three doses of OPV, Pentavalent, Rotavirus and PCV, and two doses of IPV.
41	If received but not as per schedule, record the reasons. (1 st FU)	_____	

Sr.no	Question	Response	Instructions
42	If not received all eligible vaccines/missing some, record the reasons. (1 st FU)	_____	
43	Status of immunization for 13-24 months & above (Complete immunization) (1 st FU)	0. Received all eligible vaccines with the alignment of the national immunization schedule 1. Received but not as per schedule 2. Not received all eligible vaccine Record not found	Complete Immunization: All vaccines described in Q:40 + Second dose of Measles/ MR/MMR, and one booster dose of OPV and DPT
44	If received but not as per schedule, record the reasons. (1 st FU)	_____	
45	Consent for a biochemical marker?	1. For mother only 2. For baby only 3. For mother and baby both 4. Will let us know after discussion with family 5. Not for any	

Section: 3 Food Frequency Questionnaire

No	Food items	Daily	Four /week	Thrice/ week	Twice/ week	Once/ week	Once/ 15 days	Once/ month	Occasi onally /season al	Never
[A]	Protein-rich foods									
1	Bajra									
2	Wheat flour, whole									
3	Bengal gram, dal									
4	Green gram, dal									
5	Lentil, dal									
6	Red gram, dal									
7	Soyabean, white									
8	Groundnut									
9	Egg, poultry, whole, boiled									
10	Chicken, breast									
11	Chicken, liver									
12	Salmon									
13	Tuna									
[B]	Vitamin A and Beta-carotene-rich foods									

No	Food items	Daily	Four /week	Thrice/ week	Twice/ week	Once/ week	Once/ 15 days	Once/ month	Occasi onally /seaso nal	Never
1	Egg, poultry, whole, boiled									
2	Chicken, liver									
3	Goat, liver									
4	Amaranth, leaves									
5	Colocasia, leaves									
6	Drumstick, leaves									
7	Fenugreek leaves									
8	Spinach									
9	Mango, ripe, kesar									
10	Sweet potato, brown skin									
11	Carrot, orange									
[C]	Iron-rich foods									
1	Bengal gram, whole									
2	Cowpea, brown									
3	Lentil, dal									
4	Moth beans									
5	Peas, dry									
6	Fenugreek, leaves									
7	Drumstick, leaves									
8	Cluster beans									
9	Dates, dry, dark brown									
10	Mint leaves									
11	Gingelly seeds, white									
12	Niger seeds, black									
13	Chicken, liver									
14	Beef, liver									
[D]	Calcium-rich foods									
1	Ragi									
2	Bengal gram, whole									
3	Moth beans									
4	Rajmah, brown									

No	Food items	Daily	Four /week	Thrice/ week	Twice/ week	Once/ week	Once/ 15 days	Once/ month	Occasi onally /seaso nal	Never
5	Soyabean, brown									
6	Red gram, whole									
7	Amaranth, leaves, green									
8	Colocasia, leaves									
9	Fenugreek, leaves									
10	Drumstick, leaves									
11	Curry leaves									
12	Mint leaves									
13	Gingelly seeds, white									
14	Paneer									
15	Khoa									

Section: 4 ECD questionnaire

Sr.no	Question	Response	Instructions
1	Birth date	dd/mm/yyyy	
2	Assessment date	dd/mm/yyyy	
3	Age eligibility for ECD	1. INTER-NDA 2. OX-NDA 3. Not applicable	
4	Status of ECD data collection	0. Not Collected 1. Collected	
5	If not collected, record the reason.		
7	Relationship of carer to the child		
8	What is the child's native (first) language?		
9	Does the child speak/understand any language other than his/her nati velanguage?		
10	Is the child exposed to any language other than his/her native languagefor more than 30 minutes each day on most days?		
11	What is the language in which the assessment is being conducted?		

The INTERGROWTH-21st Project Neurodevelopment Assessment - The INTER-NDA

No	Item	Observed Performance				
1	Builds a tower of 5 cubes (trials=3, demonstration=3)	5 cubes	3-4 cubes	2 cubes	No attempt	Unable to assess
2	Names 4 colours when asked to do so (trials=1, demonstration=0)	Names 4 colours	Names 3 colours	Names 1 or 2 colors	Does not name anycolor	Unable to assess
3	Matches 3 cubes of same colours when requested to do so (trials=1, demonstration=1 of one colour)	Matches 3 colours	Matches 2 colours	Matches 1 colour	Does not match any colour	Unable to assess
4	Hands the examiner one cube when asked to do so (Examiner says "Please give me one cube" & keeps palm open for 5 seconds after child has handed over 1 cube) (trials=1, demonstration=0)	Hands only one block within 5 seconds	Hands only one block in more than 5 seconds	Hands two or more blocks	Does not hand any block / No attempt	Unable to assess
5	Puts the spoon in the cup when asked to do so (trials=5, demonstration=0)	Puts the spoon in cup in ≤ 3 trials	Puts the spoon in cup in 4-5 trials	Takes the spoon or the cup but does not complete action	No attempt	Unable to assess
6	Matches shapes on board (trials=5, demonstration=partial - removal only)	All shapes in ≤ 3 trials	All shapes with repeated demonstration i.e. 4-5 trials	One or two shapes in 4-5 trials	No attempt	Unable to assess

7	Matches shapes on rotated board <i>(trials=5, demonstration=partial – removal only)</i>	All shapes in ≤ 3 trials	All shapes with repeated demonstration i.e. 4-5 trials	One or two shapes in 4-5 trials	No attempt	Unable to assess
8	Points correctly when asked “Where is the door/entrance to the room?” <i>(trials=5, demonstration=0)</i>	Identifies door correctly in ≤ 3 trials	Identifies door correctly in 4-5 trials	Attempts, but does not identify door	No attempt	Unable to assess
9	Puts a raisin precisely inside a small opening in a bottle <i>(trials=1, demonstration=1, test both hands)</i>	Precise release of raisin into bottle with each hand	Clumsy release, raisin falls out of bottle with one or more hands	Attempts but unsuccessful release with one or more hands	No attempt	Unable to assess
10	Drinks water from cup/bottle/sippy cup when placed in front of child <i>(trials=1, demonstration=0; maternal recall if observation not possible)</i>	Drinks water from cup/sippy cup without spilling	Drinks clumsily & spills	Attempts but unsuccessful	No attempt	Unable to assess
11	Looks towards an object located across the room when pointed at by the examiner <i>(trials=5)</i>	Looks or points at object in ≤ 3 trials	Looks or points at object in 4-5 trials	Looks at the wrong object, or attempts but cannot identify object	No attempt	Unable to assess
12	Pretends to drink from a toy cup when placed in front of him/her <i>(trials=2, demonstration=1 if not spontaneous on first attempt)</i>	Spontaneously	After 1 demonstration	Partial attempt after 1 demonstration	No attempt	Unable to assess

				n		
13	Able to make a cup of tea with the toy tea set when requested by examiner (Examiner says "Can you make a cup of tea?") <i>(trials=2, demonstration=1 if not spontaneous on first attempt)</i>	Spontaneously, with pouring motion	After 1 demonstration	Partial attempt after 1 demonstration	No attempt	Unable to assess
14	Feeds doll when requested to (Examiner says "Can you give the dolly some tea?") <i>(trials=2, demonstration=1 if not spontaneous on first attempt)</i>	Spontaneously	After 1 demonstration	Partial attempt after 1 demonstration	No attempt	Unable to assess
15	Imitates straight horizontal scribble <i>(trials=5, demonstration=5)</i>	≤3 trials	4-5 trials; with difficulty	Attempts (hold crayon)	Cannot hold crayon	Unable to assess
16	Identifies glitter bracelet under correct washcloth <i>(trials=5, demonstration=0, test both sides)</i>	Finds bracelet correctly in ≤2 trials on both sides	Find bracelet correctly in 3 trials or on one side only	Find bracelet correctly in 4-5 trials or on one side only	Does not find bracelet or no attempt	Unable to assess
17	Correctly identifies object groups using plurals <i>(concurrent observation)</i>	Uses 5 plurals	Uses 3-4 plurals	Uses 1-2 plurals	Does not use any plurals	Unable to assess
18	Asks for toilet by gesture or verbally <i>(maternal recall)</i>	Always	Occasionally	Partial (only for bowel movement)	Never	Unable to assess

19	Runs <i>(maternal recall)</i>	Runs steadily	Attempts	Walks only	Walks with support	Unable to assess
20	Throws a ball very near <i>(trials=1, demonstration=1; test both hands)</i>	Good release	Unsteady release	Attempts	No attempt	Unable to assess
21	Kicks ball <i>(maternal recall)</i>	Kicks ball with kneeflexed	Runs after ball & attempts kicking it	Walks and touches ball with foot	No attempt	Unable to assess
22	Climbs upstairs holding rail, 2 feet/stair or in adult fashion <i>(maternal recall)</i>	Climbs stairs alone steadily	Climbs stairs alone unsteadily	Climbs stairs with help (uses railing, holds adult's hand)	No attempt	Unable to assess
23	Uses 2-4 syllable babble such as dada, mama but not specifically to anything or any person <i>(concurrent observation)</i>	Spontaneously	Mimics	1 syllable babble e.g. ba, ma, da	None	Unable to assess
24	Use two words together <i>(concurrent observation)</i>	Two words, appropriate use	Two words, inappropriate use	One word, appropriate use	No attempt	Unable to assess
25	Indicates by gesture to say no <i>(concurrent observation or maternal recall)</i>	Indicates verbally or by definite gesture all the time	Indicates verbally or by definite gesture some of the time	Attempts, but incomplete indication	No attempt	Unable to assess
26	Use of a pronoun e.g. me, my, she, he, it, I <i>(concurrent observation)</i>	≥1 pronoun incorrect	≥1 pronoun,	Use of proper names but	No use	Unable to

		context	incorrect use	not pronouns		assess
27	How many words does the child use during the assessment other than mama/dada <i>(concurrent observation)</i>	≥8 words	6-7 words	4-5 words	≤3 words	Unable to assess
28	How many sentences of 3 words or more does the child use during the assessment? <i>(concurrent observation)</i>	≥2	1	≥1 two word utterance	None	Unable to assess
29	In how many instances does the child follow on a topic of conversation providing new information? <i>(concurrent observation)</i>	At least one, using ≥2 words, providing correct information	At least one, uses single words, provides correct information	Uses any number of words, provides incorrect information	Does not follow up on conversations	Unable to assess
31	Positive Affect		Never or rarely	Some of the time	Most of the time	
32	Exploration		Never or rarely	Some of the time	Most of the time	
33	Ease of engagement		Never or rarely	Some of the time	Most of the time	
34	Cooperativeness		Never or rarely	Some of the time	Most of the time	
35	Adaptability to change		Never or rarely	Some of the time	Most of the time	
36	Distractibility		Never or rarely	Some of the time	Most of the time	
37	Negative Affect		Never or rarely	Some of the time	Most of the time	

The Oxford Neurodevelopment Assessment for 10 – 14 months

Item No	Item	Observed Performance				
1	Builds a tower of 3 cubes (Trials = 5, demonstration = 5)	3 cubes in ≤ 3 trials	3 cubes in 4-5 trials	2 cubes in 5 trials	No attempt	Unable to assess
2	Takes 3 cubes out of cup (Examiner says "Look, I am putting the cubes into the cup - one, two and three. Can you take them out?") (Trials = 3, demonstration = 0 but visibly place cubes inside cup before asking child to take them out counting as you go)	Takes all 3 cubes out of the cup in ≤ 3 trials	Takes 2 cubes out of cup	Takes 1 cube out of cup	No attempt	Unable to assess
3	Puts 3 cubes back in cup (Examiner says 'Can you put the cubes back in the cup?') (Trials = 3, demonstration = 0)	Puts all 3 cubes inside cup in ≤ 3 trials	Puts 2 cubes inside cup in ≤ 3 trials	Puts 1 cube inside cup in ≤ 3 trials	No attempt	Unable to assess
4	Hands the examiner one cube when asked to do so (Examiner says 'Please can you give me 1 cube?') (Trials = 1, demonstration = 0)	Precise release of one cube into examiner's hand	Clumsy release, cube falls out of examiner's or child's hand, child gives examiner more than one cube	Attempts but unsuccessful release with one or more hand	No attempt	Unable to assess

5	Squeeze toy to make sound (trials = 1, demonstration = 2 squeezes followed by 2 squeezes)	Squeezes toy to make sound	Squeezes toy but not hard enough to make sound	Picks up toy and plays with it but does not squeeze it	No attempt	Unable to assess
6	Drop squeeze toy on floor (Examiner says "Uh oh, where's ducky gone?") (trials = 5 following verbal prompts, demonstration = 0)	Child looks towards object or tries to retrieve it spontaneously	Child looks towards object or tries to retrieve it in ≤ 3 prompts	Child starts looking for fallen toy on repeated prompting (4-5 prompts)	Child does not look for toy even on repeated prompting	Unable to assess
7	Finds squeeze toy under cup (Examiner hides toy under cup and says 'Where's ducky gone now?') (trials = 1, demonstration = 0; verbal prompts = maximum 3)	Child retrieves toy spontaneously by inverting cup	Child pushes cup or points to cup but does not retrieve toy	Child looks at cup but does not touch it	No attempt	Unable to assess
8	Ask child to give squeeze toy to mummy (trials = 5, demonstration = 0)	Child gives toy to mother in ≤ 3 trials	Child gives toy to mother with repeated prompting i.e. 4-5 trials	Child does not give toy to mother or gives it and takes it back	No attempt	Unable to assess

9	Identifies spoon out of 5 objects. Examiner says, "Which one is the spoon?" (trials = 5, demonstration = 0)	Child correctly identifies spoon in ≤ 3 trials	Child identifies spoon with repeated prompting i.e. 4-5 trials	Child identifies an object but it is not the spoon	No attempt	Unable to assess
10	Identifies sock and toothbrush out of 5 objects. Examiner says, "Show me the sock and the toothbrush". (trials = 3, demonstration = 0)	Child correctly identifies sock and toothbrush correctly	Child identifies one object correctly	Child attempts to identify objects but none are correct	No attempt	Unable to assess
11	Pretends to drink from a toy tea cup when placed in front of him/her (Trials = 2, demonstration = 1 if not spontaneous on first attempt)	Spontaneously	After 1 demonstration	Partial attempt after 1 demonstration	No attempt	Unable To assess
12	Lifts empty cup by handle (if not concurrently observed with item above; demonstration=1, trial = 1)	Lifts cup to mouth by handle using one hand with pincer grasp	Lifts cup to mouth using one hand with full hand grasp	Lifts cup to mouth using both hands – full grasp	Touches cup but does not lift it or no attempt	Unable to assess

13	Feeds doll when requested to. Examiner says, "Can you feed dolly some tea?" (Trials = 2, demonstration = 1 if not spontaneous on first attempt)	Spontaneously	After 1 demonstration	Partial attempt after 1 demonstration	No attempt	Unable to assess
14	Matches shapes in puzzle (objects in 1 line) (Trials = 5, demonstration = 0)	All shapes in ≤ 3 trials	All shapes in 4-5 trials	1 or 2 shapes	No attempt	Unable to assess
15	Matches shapes on rotated puzzle (objects in 1 line) (Trials = 5, demonstration = 0)	All shapes in ≤ 3 trials	All shapes in 4-5 trials	1 or 2 shapes	No attempt	Unable to assess
16	Unscrews lid of box to retrieve raisins (Trials = 2, demonstration=1 if first attempt unsuccessful)	Unscrews lid in first attempt	Unscrews lid after demonstration	Attempts but unsuccessful	No attempt	Unable to assess

17	Puts a raisin precisely inside a small opening in a box (Trials =1, demonstration = 1, test both hands)	Precise release of raisin into box with each hand	Clumsy release, raisin falls out of bottle with one or more hand	Attempts but unsuccessful release with one or more hand	No attempt	Unable to assess
18	Thumb-finger tip grasp – grasps raisin between thumb and index finger (Observed during item above, trials = 0, demonstration = 0)	Precisely grasps raisin between thumb & index finger on both	Clumsily grasps raisin between thumb & index finger on either	Grasps the raisin with fingers on one or both hands	Tries to grasp raisin with palm or no attempt	Unable to assess
		hands	hand or both hands			
19	Child imitates 4 different consonant-vowel combinations e.g. 'dolly' 'baby' 'lorry' 'happy' 'cookie' (Trials = 4; can ask child to repeat after mother)	Imitates 3-4 consonant-vowel combinations correctly	Imitates 1-2 consonant-vowel combinations correctly	Imitates but not correctly	No attempt	Unable to assess

20	Responds to name by interrupting activity (scribbling) (Trials = 3, demonstration = 0)	Immediately on calling name when engaged in an activity	Only when mother calls child's name when child is involved in an activity	On repeated calling i.e. 2-3 trials	Does not respond to name	Unable to assess
21	Responds to 'no-no' e.g. stops reaching for an object (more crayons) when you say no-no (Trials = 3, demonstration = 0)	Child stops immediately (may or may not continue reaching after a few seconds)	Child stops on repeating no-no 2- 3 times (may or may not continue reaching after a few seconds)	Child does not stop reaching but looks up	Child does not react to no-no	Unable to assess
22	Transfers ball from one hand to another (Trials =1, demonstration = 1)	Freely transfers ball from right to left and left to right hands	Transfers in one direction only	Unable to release ball during 1 or more transfers	No attempt	Unable to assess
23	Walks sideways with support (Concurrent observation or maternal recall)	Walks 3-4 steps with stepping movements	Walks 1-2 steps with stepping movements	Stands only (with/without support)	Stands momentarily or no attempt	Unable to assess

24	Stands alone for >3 seconds when placed in that position (Concurrent observation/trials = 1)	Stands without support for >3 seconds	Stands without support for <1-3 seconds and then falls/reaches for support	Attempts but cannot stand at all without support	No attempt	Unable to assess
25	Walks alone (Concurrent observation/maternal recall)	Walks 5 steps unsupported with stepping movements	Walks 1-3 steps unsupported with stepping movements	Walks forward supported by an adult	Cannot walk even if supported	Unable to assess
26	Raises self from sitting to standing position (Concurrent observation/maternal recall)	Can stand up himself/herself with support and stay standing for 5 seconds (chair/table/adult's hand)	Can stand up himself/herself with support but cannot stay standing for 5 seconds (chair/table/adult's hand)	Tries to stand up with support but not able to stand up completely	Cannot stand up from sitting position at all,- or no attempt	Unable to assess
27	Two 2-4 syllable babble such as dada, mama but not specifically to any person or any thing (Concurrent observation)	Spontaneously	Mimics	1 syllable bable e.g. ma, da, pa	None	Unable to assess

28	Uses one meaningful word (Concurrent observation)	Spontaneously, and in correct context	Spontaneously, but in incorrect context	Mimics on hearing	Does not use words	Unable to assess
29	Uses two meaningful words together (Concurrent observation)	Spontaneously, and in correct context	Spontaneously, but in incorrect context	Mimics on hearing	Does not use words	Unable to assess
30	Combines word and gesture when asked (Do not demonstrate, trials = 3, use different examples each time)	Combines word and gesture completely and appropriately	Combines word and gesture completely but inappropriately	Combines word and gesture incompletely but inappropriately	Does not combine word and gesture	Unable to assess
31	Positive affect		Never or rarely	Some of the time	Most of the time	
32	Exploration		Never or rarely	Some of the time	Most of the time	
33	Ease of engagement		Never or rarely	Some of the time	Most of the time	
34	Cooperativeness		Never or rarely	Some of the time	Most of the time	
35	Adaptability to change		Never or rarely	Some of the time	Most of the time	
36	Distractibility		Never or rarely	Some of the time	Most of the time	
37	Negative Affect		Never or rarely	Some of the time	Most of the time	