Starting Stronger Together: A pilot peer cooking programme and enquiry into the food and nutrition experiences of mothers from marginalised communities in OX4

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"It's like a little weekend in the middle of the week".
(workshop participant)

This report was commissioned by the OX4 Food Crew. The programme was delivered by OX4 Food Crew partners: Waste2Taste (cooking and nutrition workshops), Flo's the Place in the Park (coordination, childcare, and admin), and Oxford City Farm (kitchen and facilities). The report was reviewed by Marie Lehri and Rosalia Barresi (Waste to Taste), Madhur Wale and Annie Davy (OX4 food Crew, Flo's, Early Lives Equal Start), Cristina Filtingher (pilot participant), and Dr Shobhana Nagraj (University of Oxford).

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Executive Summary

This report describes the implementation of a pilot place-based cooking and nutrition programme, and the findings from research undertaken during the pilot. The aim of the pilot was to explore the potential of the programme to improve nutrition in the first 1000 days among women and children from disadvantaged and diverse cultural backgrounds in OX4. The programme consisted of an eight-week programme of workshops, with each workshop lasting three hours. Each workshop combined (1) a cooking skills session, (2) discussions about nutrition, and (3) research activities, followed by lunch together.

The programme was piloted in two rounds during 2023 with a total of 15 participants. Most participants were migrants from a wide variety of countries and ethnolinguistic groups, a few were second generation immigrants. All had at least one child under two.

Key findings

The increases in knowledge, skills and confidence reported by participants suggest that the programme may have the potential to improve nutrition in the first 1000 days. It is possible that these benefits would be magnified for pregnant women and mothers with weak cooking skills, limited nutritional knowledge and weak social networks, and could help to tackle problems of diet-related poor health, and health inequalities, in OX4.

Participants reported that they had made important changes in their food choices and cooking up to six months after completing the workshops.[1] They believed the changes were helping to improve the nutrition and health of their families, and pointed to 'ripple effects' on extended family.

These conclusions should be understood in the context of the limitations of the study: the sample was small and not representative; the information is self-reported and may contain some bias; and we have not measured changes in dietary intake or nutritional status.

Participant feedback from the online survey:

- ***100% (15) reported increased confidence in cooking meals for their families.***
- ***80% (12) scored 4 or 5 out of 5[2] on 'I learnt new recipes and/or new ways to cook'.***
- ***80% (12) reported learning something new about nutrition during the workshops.***
- ***87% (13) scored 4 or 5 out of 5 on 'I made new friends'.***
- ***80% (12) said their health and well-being increased as a result of the workshops.***

Perceived barriers to good diet in the first 1000 days included:

- Availability issues, including poor access to fresh foods at an affordable price in Oxford, and deterioration in the quality of food from food banks due to food price inflation.
- Rising food prices leading to: substitutions towards lower quality foods and less dietary diversity; possible exposure to pesticide residue given the cost of organic produce; and reluctance to introduce new foods to children because of the risk of wasted food.
- Low awareness among some mothers of NHS guidelines on diet during pregnancy, and beliefs which may lead to excessive restrictions on diet (types and quantity of food) during pregnancy.

[1] This was confirmed at a sense-making workshop held in January 2024, six months after completion for Group 1 and two months after completion for Group 2.

[2] Scores ranged from 1 to 5, with 5 being high.

- Difficulties feeding children, including: exclusive breastfeeding for less than six months, difficulties introducing new foods and vegetables to young children, and pressure from young children for 'junk' and 'fast' food.
- Pressures during pregnancy and in the early stages of motherhood (feeling busy, stressed, or unwell, or with limited time and energy) leading to consumption of highly processed foods.

Policy recommendations

- Support programmes to develop a healthy local food culture for the first 1000 days.
- Support the evaluation of cooking programmes and share best practice findings.
- Improve access to healthy and affordable food in local neighbourhoods, including fresh farm produce and fish. Support initiatives to bring locally-grown produce to residents through short supply chains.
- Ensure that NHS guidance on diet during pregnancy, breastfeeding and child feeding reaches more marginalised communities.
- Promote Healthy Start vouchers to ensure that those who are eligible take them up.
- Support community research that brings community voices and lived experience to bear on food systems and health services policy decisions related to the first 1000 days.

Recommendations for further research

If a follow-on programme is implemented, conduct an evaluation to provide robust evidence of the effects of the programme on nutrition in the first 1000 days. The evaluation should:

- Be guided by a clear Theory of Change highlighting the potential mechanisms of change, and identifying key assumptions about the way change is expected to happen.
- Include measurement of changes using validated tools in a pre/post design, including measurement of changes in dietary intake and nutritional status.
- Explore the mechanisms through which any observed changes occur, and the degree to which these are reproducible in similar contexts.

Further clarity is needed on how to identify and recruit population groups most likely to benefit from the programme, as well as the optimal timing and delivery of the programme for such women:

- Co-design of the programme with target communities would help refine implementation strategies and anticipate barriers that women may face in introducing changes in the home.
- Programme co-design and further research could be undertaken with researchers from the communities of interest, including some of the women who participated in the pilot.
- Further research would benefit from a review of the evidence base for nutrition education programmes during pregnancy and the postpartum period.

Contents

1. Introduction

This report describes the **implementation of a pilot place-based programme aimed at understanding how to improve nutrition in the first 1000 days in the OX4 postcode of Oxford,** and the findings from research undertaken during the pilot. The report is intended to inform the work of the implementing organisations and other members of the OX4 Food Crew,[3] and other organisations and policymakers working to improve nutrition in the first 1000 days, and food systems more broadly, in Oxford.

The research forms part of the broader **research agendas of the OX4 Food Crew and the Equal Start project**,[4] which focus respectively on:

- Understanding, and developing strategies to reduce, food insecurity in OX4.
- Developing strategies to support pregnant women and early-stage mothers from marginalised communities in OX4 who are at risk of adverse outcomes to thrive in pregnancy and early parenthood.

We are hugely grateful to the participants for their contributions to this study, and to Flo's childcare professionals and Oxford City Farm's Farm Lead (Nicole Titera) for their support.

2. About the Starting Stronger Together programme

The aim of the Starting Stronger Together pilot was to explore the potential of a place-based cooking skills and nutrition education programme to improve nutrition in the 'first 1000 days' among women and children from disadvantaged backgrounds and diverse cultural backgrounds in OX4. The first 1000 days covers the period from the date of conception to a child's second birthday. Good nutrition is of critical importance during this period for a child's physical growth and cognitive development, and for its health and life chances *throughout* life.[5]

The pilot was a **collaboration among three members of the OX4 Food Crew,** Waste to Taste,[6] Flo's – The Place in the Park,[7] and Oxford City Farm.[8] Funding for the pilot was provided by the National Lottery Reaching Communities Fund.

2.1 How the programme was implemented

The programme was piloted during 2023 in two rounds: Group 1 (May-July 2023) and Group 2 (September-November 2023). Each round consisted of an **eight-week programme of workshops**, with each workshop lasting for three hours (9.30am-12.30pm) on a weekday morning. Each workshop consisted of a combination of (1) a cooking skills session (2) discussions about nutrition, and (3) research activities, followed by lunch together.

The **cooking skills sessions** focused on healthy, inexpensive, sustainable and culturally adaptable meals suitable for young children and the whole family. Ingredients were sourced from Oxford Food Hub, a local food surplus redistribution charity, with recipes improvised according to the ingredients

[3] https://www.ox4foodcrew.co.uk/.
[4] https://www.flosoxford.org.uk/eles/.
[5] See for example: https://thousanddays.org/why-1000-days/. Accessed 7 December 2023.
[6] https://www.waste2taste.co.uk/.
[7] https://www.flosoxford.org.uk/. Referred to as 'Flo's' in the remainder of this report.
[8] https://www.oxfordcityfarm.org.uk/.

available on the day in order to encourage the creativity to adapt recipes to available ingredients. The recipes were collated into a booklet.

Nutrition education was provided during the cooking sessions, in a dedicated Q&A session with the cooking facilitators,[9] during group discussions for the research, and in the recipe book.

Research activities were undertaken before or after each cooking workshop. Additional participant feedback was collected at the end of the pilot. Participants received a £15 supermarket voucher for each session in recognition of their time and contribution to the research. The research is described in more detail in section 3.

The workshops took place at Oxford City Farm, a **community venue** in OX4 with easy access by public transport. The venue provided a welcoming space with indoor and outdoor meeting areas, and the opportunity to observe food production and interact with farm animals. Young children were supervised by two childcare professionals.

2.2 Programme participants

Figure 1: Flyer used to advertise for Group 1

Participants were recruited via OX4 Food Crew member organisations, the Equal Start Steering Committee, local community food banks, services and networks, and social media, using the flyer shown in Figure 1. Some of the Group 2 participants heard about the programme from friends from Group 1 or on a WhatsApp group for Muslim mothers in Oxford. **Eligibility criteria** were:

1. Woman living in OX4 postcode.
2. Pregnant and/or has a child up to 5 years of age.[10]
3. An interest in healthy cooking.
4. Participant willing to take part in the research and commit to attend at least six sessions.

The table below shows key participant characteristics. Each group consisted of a core of eight women. One woman participated in both groups, giving a total of 15 participants. [11] Most participants had migrated to the UK with their families, some recently, while others had been here for many years. A few were second generation. All participants had at least one child under two years of age, and one was pregnant. Most of the participants were not working outside the home, although some returned to work during the workshops. All had a partner or household member earning an income.

[9] One of the facilitators holds two diplomas in nutrition and is studying for a degree in nutritional therapy.
[10] Mothers with children up to age five could apply to participate, due to a concern that restricting the criterion to mothers with children up to two years would make recruitment difficult. In fact, all participants had at least one child under two years of age.
[11] One of the Group 1 sessions fell on Eid, limiting the participation of Muslim women. Flo's invited a different group of women, all from Timor Leste, to this session. They are included in the table. However, most of the evidence in this report reflects the experience of the core 15 women.

Table 1: Key characteristics of participants

Characteristics	Group 1 (8 women)	Group 2 (8 women)
Country of origin	Ethiopia, India, Morocco, Pakistan, Jordan, Syria, Timor Leste, UK	Morocco, Nepal, Pakistan, Romania, Somalia, UK
Ethnicity	African, Arab, Indian, Pakistani, Timorese	African, Arab, Asian, Berber, Black British, White Romanian
First language	Arabic, English, Tetum, Urdu	Arabic, Berber, English, Nepali, Somali, Urdu

2.3 Implementation challenges.

There were some challenges during implementation:

- **Recruitment was time-consuming,** requiring sustained outreach through many local organisations working with community food service users in order to reach the target number of participants.
- **Recruitment efforts did not reach women most likely to benefit from the programme,** for example, women in receipt of food support or with poor cooking skills. Feedback on barriers to participation from women who declined the invitation to sign up included: working long hours, exhaustion, unable to participate during the daytime, difficulties traveling to the venue, language barriers, and reluctance to participate in a multi-cultural group.[12]
- **Attendance was low at some sessions**. This occurred particularly with Group 2, largely due to sickness among the mothers and/or children during the autumn season. It was less of an issue with Group 1, with the main reason for absence being travel overseas to visit family during the summer season. There were a few early drop-outs: one pregnant, due to complications and doctor's advice to rest, and two others, as they returned to work after maternity leave.
- **The programme came with a high coordination and reporting burden**. Coordination across multiple implementing organisations, alongside coordination of participant attendance and childcare, was complex and resource intensive. And the programme was implemented with funding from several sources, each with their own reporting requirements. Implementation by a single organisation, and with funding from one source, would be less burdensome and more cost-effective.

3. About the research

3.1 Research questions, approach and methodology

The research was used to generate evidence to support the design and implementation of a follow-on programme, if the research suggested that the programme has *the potential* to improve nutrition in the first 1000 days in OX4. Accordingly, it was designed to **answer the following overarching research question**:

Overarching research question: "Does a programme that combines cooking and nutrition education *have the potential* to improve nutrition in the first 1000 days among women and children from disadvantaged backgrounds and diverse cultural backgrounds in OX4?"

[12] This last barrier was cited by women from Timor Leste. The Equal Start project has encountered the same issue. On the other hand, many of the women who participated cited being in a multi-cultural group as one of the benefits of the programme.

The specific research questions below, agreed by the implementing organisations, were used to guide the research:

Specific research questions:

1. What influences and shapes eating and nutrition, and what are the difficulties and barriers to having a good diet, in the first 1000 days among women and children from disadvantaged backgrounds and diverse cultural backgrounds in OX4?
2. How do pregnant women and mothers of young children experience and perceive nutrition-related services and support in the first 1000 days in OX4?
3. Did the pilot programme help to improve outcomes on key variables among participants?
4. What benefits did participants gain from the pilot programme, and were there any drawbacks? How can the programme be improved in order to meet the needs of pregnant women and mothers with young children in OX4 in relation to nutrition in the first 1000 days?
5. What did we learn about conducting community-based research in this context - what worked well and what were the challenges?

This was a **predominantly qualitative study, designed to amplify the voices of women with young children from disadvantaged and diverse cultural backgrounds in OX4.** The research methods were designed to be engaging, fun, and creative. They included: group discussions, peer interviews,[13] photo elicitation,[14] and participatory mapping.[15] Assessment of outcomes was retrospective, self-reported, and largely qualitative, complemented by a small set of quantitative data collected via an online feedback survey. Participants were asked about benefits and changes that occurred as a result of the workshops in the last group discussion.

Group discussions were recorded with informed consent. The recordings were supplemented by notes made by the researcher during and immediately following each workshop. **The data were analysed using thematic analysis, organised by the guiding research questions.** Data from Group 1 and 2 were analysed together, as there were no significant differences in the data collected from the two groups. Preliminary conclusions were discussed during a sense-making workshop in January 2024 with nine participants from both groups.

3.3 Research ethics

Participants were provided with an information sheet explaining the purpose of the research, how the research would be conducted, and that their participation was voluntary, as well as conditions around confidentiality, anonymity and safeguarding. Participants were asked to **sign a consent form** after reading the information and having the opportunity to ask questions. All personal information about participants was stored by Flo's in line with the General Data Protection Regulation (GDRP).

3.4 Strengths and limitations of the research

The **strengths of the research** included:

[13] Participants interviewed each other using standard pre-designed questions and their own questions.
[14] Participants took a photo related to a theme (child feeding). The photos were discussed by participants during one of the group discussions.
[15] The map of OX4 highlighted where participants live, where they shop, and the location of food and nutrition-related services they have used.

- The reach of the OX4 Food Crew into the local community, and Flo's strong relationships with women involved in the Equal Start project, contributed to the willingness of participants to engage in the research.
- The 8-week duration of each workshop series provided an extended timeframe for the researcher to build trust with the participants. This contributed to data quality, and an in-depth understanding of the experiences of the participants.
- The researcher is a resident of OX4 and has sound knowledge of the local context.
- The combination of cooking workshops with research meant that the research was less extractive than some forms of research, as there were direct benefits for participants.
- Providing vouchers to the participants for their engagement with the research helped to signal that their time and contributions were valued.

The **limitations of the research** included:

- The number of participants was small, and their views are not representative of the experiences of all pregnant women and mothers of young children in OX4.
- The participants were reasonably knowledgeable about nutrition and child feeding and generally had strong cooking skills. Others in OX4 may derive greater benefit from the programme than is reflected in our data.
- The information collected during the research was self-reported. It is possible that the information reflects some social desirability bias.
- The online survey used to collect feedback was not anonymous. It is possible that there is a positive bias in survey responses, although we believe this was attenuated by the trust built over time.
- Outcomes were not measured using validated tools before and after the programme. Doing so in future would provide more robust data on the effectiveness of the programme.
- We do not know if the changes in knowledge and skills reported by participants will be sustained over time or result in improved nutrition in the first 1000 days. This would require more resources to conduct an evaluation measuring changes in nutritional status and verifying the causal links between the programme and any observed changes. Our research informs a judgement on whether the programme *may have the potential* to improve nutrition in the first 1000 days but does not allow us to conclude whether or not that happened among pilot participants.

4. Research findings

Research question 1: What influences and shapes eating and nutrition, and what are the difficulties and barriers to good diet, in the first 1000 days among women and children from disadvantaged backgrounds and diverse cultural backgrounds in OX4?

Food availability and access: the local food environment

Key messages:

- Big supermarkets were the primary location for food shopping. Some shopped at markets but felt the produce was of low quality and more expensive than at the supermarket. Some used food banks, but their use can provoke feelings of shame and guilt.
- **Barriers to good diet** included: difficulty accessing fresh food at an affordable price, and deterioration in the quality of food from food banks due to food price inflation.

All participants did the majority of their food shopping in big chain supermarkets. The 'budget' supermarkets were favoured - Aldi, Iceland and Lidl. Without access to private transport, many relied on the bus to get to the larger supermarkets, or picked up a small number of items on frequent trips to smaller supermarkets in Cowley centre or their neighbourhoods. They are likely to be subject to higher food prices in the smaller supermarkets.[16]

Some participants also shopped at markets – Gloucester Green and Headington farmer's market - but felt that the produce was not very fresh, and was more expensive than at the supermarket. One participant, comparing markets in Oxford and Morocco, highlighted that the difficulty accessing fresh food at an affordable price in Oxford can force people into less healthy choices:

> *"Back home you go to [the] open market…., it's all fresh and smells beautiful, what you can buy for the whole week it stays good, and [the cost] is really low….You don't have access to too many products that are created for you to buy that are filled with not good things. Here, …. you are forced to take these things because you don't have other options".*

Some participants in Group 1 collected food from the Oxford Community Action[17] food bank at Ark-T each week. They noted that the **quality and type of food was variable, and that the quality had deteriorated due to recent food price inflation.** Some indicated they feel shame using a food bank, and one said that she felt guilty taking food that others might need more than her family:

> *"[There's] a shame factor and a guilt factor that you're having to resort to the food banks…….'who's gonna see you?'".*
>
> *"….if I'm going to a food bank, I may be taking food from someone more deserving than me and I don't want to do that, but at the same time I want help with my family too".*

Affordability: food prices and 'cost of living' pressures

Key messages:

- Participants need to manage money carefully, and price is an important determinant of food choices.
- **Barriers to good diet** included: substitutions towards lower quality foods and less dietary diversity due to rising food prices, difficulty affording organic produce for the youngest children to avoid exposure to pesticide residue, reluctance to introduce new foods to children because of the risk of wasted food.

Participants described needing to manage money carefully, all the more so since the recent increases in food and living costs in the UK. That meant that food choices were largely shaped by

[16] See Hansford and Friedman, 2015. Food poverty in Oxford: A qualitative study in Barton and Rose Hill, p.9.
[17] https://oxfordcommunityaction.org/.

price – knowing what is cheaper in which shop, looking for offers and price reductions, and making compromises towards the end of the month:

> *"[When] we go to the supermarket, now we go and we see ……. what's on offer. The supermarket's gonna decide for you what you buy….you won't go for the food you had in your head before you went".*

Some reported no longer shopping for food at independent shops on Cowley Road, or only shopping there for special occasions, due to price increases, even though this meant sacrificing foods which they like from their home countries.

Rising food prices led to substitutions towards lower quality foods for all participants, for example using cheaper cooking oils instead of olive oil, choosing processed products like sausages instead of unprocessed meat, replacing fish or red meat with chicken, eating less or no organic fruit and vegetables. Rising prices also meant reduced dietary diversity, for example, in fruits consumed.

Participants were aware of the impact of higher food prices on their young children's diets. Some who were aware of the risks of pesticide residue for children wanted to buy organic in the early years of their children's lives, but felt less able to do so due to price rises. Some were also more reluctant to introduce new foods to their children, because of the risk of wasted food if their children didn't like the food. One stated, referring to 'eating the rainbow' for dietary diversity:

> *"There should be a rainbow …..for the kids….we have to skip two or three colours from the rainbow with the increasing cost of living….".*

Maternal nutritional knowledge and beliefs

Key messages:

- Participants were reasonably knowledgeable about nutrition before starting the workshops but observed that some in their communities are less so.
- When information from different sources about nutrition in the first 1000 days conflicted, most participants deferred to information from health professionals and trusted websites.
- **Barriers to good diet** included: changing information about nutrition, lack of awareness of NHS guidance on diet during pregnancy, and excessive restrictions on diet during pregnancy (types and quantity of food) in line with beliefs from other countries.

Participants were interested in and knowledgeable about nutrition. They understood the basics of a healthy diet– the importance of eating a diverse diet, of cooking from scratch when possible, and of limiting the consumption of highly processed foods. All were aware of the importance of good nutrition during pregnancy and the early years. Some participants observed that others in their neighbourhoods/communities may not have good nutritional knowledge, including being unaware of the importance of diet during pregnancy and the harmful effects of sugar on young children:

> *"A lot of people don't know that what they eat in pregnancy affects their baby".*

> *"I see that babies and young children have a lot of sugar – they don't [know] that sugar can be harmful…they give children sugar, and children get used to it and want more".*

Sources of information about nutrition during the first 1000 days included: NHS health workers (although there was wide agreement that health workers provided limited information due to time constraints); family members, especially mothers; and the internet, including NHS websites, YouTube,

and other sites found through Google searches. Most participants said they listened to information and advice from different sources – particularly family members and health professionals – and if the advice conflicted, they deferred to information from health professionals and trusted websites:

> *"You get advice from everyone, do this, do that, but I …take the science part."*

> *"I listen to the midwife, because you're responsible for another person."*

Most participants concurred that they felt confused by changing information about nutrition, and the implications for children's diets. Examples cited included the 'sugar vs fat' debate, which oils to cook with, and whether to use butter or margarine.

Beliefs about foods to avoid during pregnancy varied greatly. Foods to avoid included: tinned and organ meat, some types of fish and seafood, bitter foods (e.g., aubergine, bitter gourd), pineapple, honey, flaxseed, caffeine and fizzy drinks. Some were aware that eggs and meat should be fully cooked. Some stated that some of these foods should be restricted only in the first two trimesters – for example, liver, pineapple, and flaxseed.

The restrictions reflected a mix of guidance and beliefs from the UK and home countries, although not all participants were aware of NHS guidelines on foods to avoid, such as soft cheese and raw fish. In some cases, the restrictions from different countries of origin conflicted. Participants were, on the whole, unclear about the reasons for restrictions. Some classified foods as 'hot' and 'cool'; 'hot' foods (e.g., ginger, flaxseed, almonds and semolina) were understood to help with conception and with contractions before birth, but were to be avoided in the first two trimesters.[18]

Beliefs about how much to eat during pregnancy were also discussed. Two participants were told by family members to eat more during pregnancy and breastfeeding. Both ignored the advice:

> *"People back home say to eat anything, eat more, eat for two. I respected them but I never followed them."*

Another reported that she didn't want to eat too much as she preferred to have a small baby:

> *"I want my baby to be small, because I don't want a [difficult birth]".*

The NHS advises avoiding some foods due to risks to the unborn baby.[19] However, excessive restrictions related to types and quantity of food may be harmful to the mother and unborn child.

Infant and young child feeding practices

Key messages:

- Participants were aware of NHS guidance to breastfeed exclusively for six months; most followed the guidance, but a few introduced other foods earlier because their babies seemed to be hungry or were showing an interest in solid foods.
- Weaning practices varied, some used puréed and mashed foods initially, others followed baby-led weaning as soon as possible.

[18] The classification system is common in some countries. According to one study, "The general belief is that "hot" foods are harmful and "cold" foods are beneficial during pregnancy. "Hot" foods are encouraged during the last stage of pregnancy to aid the expulsion of the foetus". Ramulondi, M., de Wet, H. & Ntuli, N.R. Traditional food taboos and practices during pregnancy, postpartum recovery, and infant care of Zulu women in northern KwaZulu-Natal. J Ethnobiology Ethnomedicine 17, 15 (2021). https://doi.org/10.1186/s13002-021-00451-2. Accessed 7 December 2023.

[19] https://www.nhs.uk/pregnancy/keeping-well/foods-to-avoid/. Accessed 7 December 2023.

- **Barriers to good diet** included: stopping exclusive breastfeeding before six months, difficulties introducing new foods and vegetables to young children, and pressure to give young children 'junk food' and 'fast food'.

All participants wanted to exclusively breastfeed their children in the first months. Some experienced initial difficulties breastfeeding their first child, but had overcome the difficulties with help from health professional and/or family members. Only one used mixed feeding (formula and breastmilk) from birth on the advice of a health professional because her babies were underweight.

Participants were aware of NHS guidance to breastfeed exclusively until six months, and while most followed the guidance, a few introduced solids at four or five months and some participants knew people who had introduced solids before three months. This was most commonly because the child seemed to be hungry on breastmilk alone, or was showing an interest in solid foods. Some heard from their mothers that it was fine to introduce solids before six months; one participant followed NHS guidance with her first baby, but when weaning was difficult, she decided to follow her mother's advice with her second child:

> *"I was so desperate to follow science and research and not to give solids before she is ….6 months, but after that she is rejecting food and just wanted my milk. With my second baby I followed what my mum said, to start early at about 4 months and give them a taste of everything, and things worked out pretty well".*

Weaning practices varied across participants. Some started with puréed foods before moving on to mashed and then solid foods. Others preferred to follow baby-led weaning as soon as possible. Most were keen to give their babies the same food as the rest of the family as early as possible, in order to reduce food preparation time. Some mentioned that they omit salt and sugar from their children's diets until one or two years of age, and adapt family dishes accordingly. Many participants found their children could be 'fussy', reluctant to try new foods and especially vegetables:

> *"They are fussy…..They don't like many vegetables and they don't like to try new things".*

> *"[It's a] struggle to give them healthy food from early, you cook new things, they don't want to try it, you feel bad".*

Once children were a little older – but some still under 2 years old - mothers reported coming under pressure to allow them to eat 'junk food' such as crisps and sweets, and food from 'fast food' restaurants:

> *"I found feeding my children difficult because their favourite food is fast food. I try to limit it.....it's partly because they see older siblings eating them".*

Some worried that they were to blame for their children's food preferences:

> *"I blame myself that my children don't like vegetables. In Asian culture, we want our children to be happy so if they don't like something we give them something else, or the grandparents do."*

Maternal skills, time and energy for cooking

Key messages:

- Participants had strong cooking skills, but were aware that other parents around them do not have the same skills.

- **Barriers to good diet** included: for pregnant women, feeling tired, nauseous or without appetite; for mothers with young children, feeling busy, stressed and tired, and resorting to easy, shop-bought options from the freezer.

All of the participants demonstrated that they were good cooks, and that they were accustomed to cooking from scratch. The photos of meals prepared at home, submitted for the photo elicitation exercise, reflected the influence of the cuisines of their home countries, recipes they had learned from their mothers and grandmothers, as well as influences from British cuisine. They were however aware that many parents around them do not have the same skills:

> *"Lots of people don't know how to cook now. It's not essential now".*

They acknowledged that there can be many barriers, for themselves and other mothers, to eating well every day. Some reported feeling very tired during pregnancy, and sometimes nauseous or without appetite.

> *"…. you are very tired when you're pregnant…if someone's not around you at that moment to help you, so you can go to a place where you don't make really good choices for yourself".*

Many described the difficulties they faced once they had children – feeling busy, tired and stressed, with limited time and energy for food preparation:

> *"….when you get a child you get very busy….sometimes you just forget to cook for yourself".*

> *"For cooking…. you need a good mood, and with this stressful world that we're living in now, sometimes we really don't have the mood to cook….".*

Participants acknowledged that faced with these constraints – time, energy, stress – there are times when they will reach for easy options such as shop-bought pizza or fish fingers from the freezer:

> *"Yes, sometimes its really hard, we give them [processed foods], sometimes we have no sleep – studying, clean, tidy, cook, in-laws to feed – what do you think, [we're] heroes?".*

Research question 2: How do pregnant women and mothers of young children experience and perceive nutrition-related services and support in the first 1000 days in OX4?

Key messages:

- Support from local non-profit organisations was appreciated, but lack of funding has limited their activities.
- Only one was receiving Healthy Start vouchers. Most were unaware of the scheme and probably ineligible, but knew others who were unaware and likely to be eligible.
- Experiences and perceptions of NHS services varied; some recounted positive experiences, others had poor experiences.
- Explanations for poor experiences included pressures on NHS staff, language barriers, not feeling listened to, and 'the way you look' (a reference to ethnicity).

Participants had received information and support related to feeding and nutrition during pregnancy and the early years from public and non-profit services, including:

- **NHS services,** including baby clinics and health visitors at GP surgeries, and Florence Park Midwives,[20] provided support for breastfeeding and weaning practices. Some participants received free vitamins during pregnancy.
- **Local non-profit organisations,** including Oxfordshire Breastfeeding Support,[21] Donnington Doorstep,[22] and Botley Bridges[23] provided support on breastfeeding and child feeding.

Only one participant was receiving NHS Healthy Start vouchers.[24] She reported that the health visitor helped with the application. Most participants were unaware of the **scheme**, and most were probably not eligible. However, some knew others in their neighbourhoods and communities who they believed would be eligible but did not know about the scheme.

Participants were happy with the support they received from local non-profits. One observed that lack of funding meant that such activities were becoming more limited.

Experiences of NHS support varied across participants. **Some recounted positive experiences:**

> *"…..for me, with my first baby, because I had no idea about how it is, and I didn't have family around to ask, so I was taking every help I could get, and they were quite helpful….especially the breastfeeding clinic, they were quite good at showing me how to do it right".*

> *"I found it helpful as well……[my son] was refusing to breastfeed. I was in hospital for a long time, every day the health visitor came, the one who was dealing with breastfeeding…".*

A few related **poor experiences with the NHS**. Several reported that they had not been given any information on diet during pregnancy, and others felt that the nutritional advice provided was lacking. One participant with anaemia was not advised to avoid dairy products after taking an iron supplement. Another was directed to a website on diet during pregnancy but felt that the information was too generic for her needs. Another did not get support for breastfeeding requested from her doctor, and one participant felt she was unfairly charged for a pump to treat mastitis.

Participants had several **explanations for poor experiences,** including pressures on NHS staff, not being listened to, language barriers, and 'the way you look' (a reference to ethnicity):

> *"[I was] not happy with some things, it's 50/50, but they're humans being as well, and they have to do a lot of things…".*

> *"…….instead of listening to us they do things how they studied…..in my case, they made very complicated her delivery".*

> *"When you're a second language speaker, you're new in the country, you're just working it all out…..and the language barrier…. you've just had a baby……there's so many things happening at the same time, that sometimes you don't have the courage to speak….".*

> *"….and the way in which you look, [I] do feel that the way that you look has some [impact]".*

[20] https://www.flosoxford.org.uk/midwives/#:~:text=Contact%20the%20midwives,be%20contacted%20on%2001865%20779284.
[21] https://www.oxbreastfeedingsupport.org/.
[22] https://www.donnington-doorstep.org.uk/#.
[23] https://www.botleybridges.org/.
[24] https://www.healthystart.nhs.uk/.

One participant observed that information about services and activities (public and non-profit) to support mothers and babies in Oxford is scattered across many different websites, meaning it can be time-consuming to find relevant information on the support that is available.

Participants had the following **suggestions to improve local services**:

- Provide more support to help non-native English speakers access services and information.
- Provide NHS baby groups in more locations, so that they are easily accessible to mothers without a car, and relax the eligibility criteria (one participant was not allowed to attend once her baby was 14 weeks old).
- Create an accessible 'one-stop' directory in an app, listing information on all mother and baby related services and activities in the city.

Research question 3: Did the pilot programme help to improve outcomes on key variables among participants?

The information for this section comes from a discussion with each group in their last session, and participant feedback on the final feedback questionnaire**. The following outcomes were assessed:**

1. Change in cooking skills and confidence.
2. Change in knowledge of nutrition relevant to the first 1000 days.
3. Change in social connections.

Outcome 1: Change in cooking skills and confidence

Key messages:

- Participants had strong cooking skills, but nevertheless reported learning new recipes that were quick, easy and economical, how to cook vegetarian meals using a greater diversity of vegetables and unfamiliar ingredients, how to make healthy substitutions, and greater confidence in their ability to cook for their families.
- Participants had introduced some vegetarian meals at home, and found that their children and male partners liked some of the dishes.
- The changes reported may have the potential to improve nutrition in the first 1000 days by increasing healthy dietary diversity and reducing consumption of animal source foods, fat, salt and sugar. They may also help to reduce the cost of feeding the family, as well as having environmental benefits through the use of seasonal vegetables, reduced food waste, and lower meat consumption.

All of the participants had good cooking skills before the workshops. They were nevertheless keen to learn more. On the feedback questionnaire:

- ***100% (15) reported increased confidence cooking meals for their families*** *as a result of the experience.*
- ***80% (12)*** *scored 4 or 5 out of 5 on* ***'I learnt new recipes and/or new ways to cook'.*** [25]

The final discussion with each group highlighted some of the learning that had taken place. This included: learning new recipes that are quick, easy and economical; how to use ingredients that they were unfamiliar with (e.g. squash, pumpkins, rhubarb); how to plan a meal using ingredients in the fridge and cupboard to cut down food waste; and how to make healthy substitutions such as olive oil

[25] Scores ranged from 1 to 5, with 5 being high.

in place of butter, pulses and vegetables instead of meat, spices instead of salt, and fresh or dried fruit instead of sugar. Some reported they had learnt to use less oil, and to avoid deep-frying foods, instead stir-frying in a little oil, or baking. Some participants indicated that the workshops had helped them develop a greater repertoire of recipes and be more creative:

> *"[I've] been making different foods since this course started…… I feel like it's opened the door for me to be more creative in what I cook, in a simple way".*

> *"It's very easy to make the same two to three things.....I have a bank of different recipes in my head now".*

The most significant change reported by all participants was their ability to use more vegetables and prepare more plant-based meals. This included using a wider variety of vegetables, using seasonally available vegetables, including a salad with main meals, and preparing vegetarian meals using vegetables and pulses instead of meat or fish.[26] Several participants reported that making vegetarian meals was time-saving compared with meals with meat, and several noted that they had learned not to overcook vegetables using new techniques like stir-frying, in order to preserve more nutrients. Most participants indicated that **vegetarian cooking was new to them and different to their countries' traditions,** which tend to emphasis meat or fish at every main meal:

> *"What we learn here is a completely new concept. We think differently, for example you look in the fridge, you think, 'ok with meat what can I make, with fish, chicken'?..... Now you open the fridge, 'what dish can I make with the vegetables?'".*

> *"Mostly I use meat or fish in my dishes, so learning to come up with a dish that is 100% vegetarian is very nice.....[it's] easy and not time-consuming".*

Some had **successfully incorporated more vegetables and plants into their children's diets:**

> *"I'm including more vegetables in [my son's] meals, he used to have quite repetitive meals ……. my mind is open to the different things I can try with him".*

Some reported that the men in their homes wanted meat at every main meal, although one reported that her husband was more receptive after trying vegetarian food from the workshops:

> "*……he usually doesn't eat anything without meat or chicken. He said 'if it's that tasty, I can eat it'".*

Some were pleased to have **learned to make their own cakes and desserts using less sugar than in shop-bought cakes and** reported that this helped them to avoid shop-bought cakes and sweets.

The reported changes in cooking skills and confidence have the potential to increase healthy dietary diversity –a wider range of vegetables and greater use of pulses - and to reduce consumption of animal source foods, fried foods and oil-heavy meals, salt and sugar, and highly processed foods. These changes may hold the potential to improve nutrition in the first 1000 days. They may also help to reduce the cost of feeding the family, given the lower cost of plant-based foods relative to animal source foods. There are also potential environmental benefits from the changes, through the use of seasonal vegetables, reduced food waste, and a reduction in meat consumption.

[26] All recipes prepared during the workshops were vegetarian. This is because Food Banks do not provide meat or fish. The implementers were not advocating for vegetarianism or veganism, but were keen to demonstrate more plant-based cooking.

Outcome 2: Change in knowledge of nutrition in the first 1000 days

Key messages:

- Participants were already knowledgeable about nutrition but nevertheless reported learning more about nutrition, including the importance of nutrition in the first 1000 days, the value of plant-based diversity, strategies for weaning, and the harm caused by ultra-processed foods.
- Increased understanding among mothers of how nutrition can improve the health and life chances of their babies may have the potential to improve nutrition in the first 1000 days by reinforcing the motivation to introduce the changes encouraged in the cooking workshops.

Participants were already quite knowledgeable about nutrition before the workshops. Nevertheless:

- ***80% (12) reported learning something new about nutrition*** *during the workshops.*

All participants were aware of the importance of nutrition during pregnancy and the start of their child's life. Not all had heard of the concept of the 'first 1000 days'. Introducing the concept helped to underline the importance of nutrition during this critical window for their babies' growth and brain development, future health and life chances:

> *"I knew pregnancy was quite important, to eat quite well for the baby, and the first year or first 6 months, but it didn't hit me that it's 2 years or could even be longer".*

Some commented that they came to appreciate the importance of **nurturing healthy taste preferences from an early age** in contributing to healthy choices as their children grew. Some participants commented that they learned about the **nutritional value of using a diversity of vegetables and plant foods** and the importance of 'eating the rainbow':

> *"Experimenting with different foods and knowing that you can get the same nutrients from ….different sources ……I learned alternatives for protein, not just animal sources".*

> *"I learned …to add a lot of rainbow vegetables to my dishes".*

During group discussions, participants **exchanged their experiences of weaning** and learned strategies from each other for introducing vegetables in particular to infants, using a combination of spoon-fed puréed foods and baby-led weaning with 'finger foods', and 'hiding' vegetables in sauces.

The concept of 'ultra-processed foods' was not familiar to all, but **all understood that salt, sugar and additives in highly processed foods are not good for young children.** Discussion of processed foods helped participants to better understand which foods are highly processed and unhealthy, and how to identify them by looking at ingredients on food packages. Recent research suggesting that ultra-processed foods are addictive was new to participants:[27]

> *"We discussed ultra-processed foods, [that] we get…..an addiction from that food, we didn't know [that] before".*

[27] See for example, Ashley N Gearhardt, Nassib B Bueno, Alexandra G DiFeliceantonio, Christina A Roberto, Susana Jiménez-Murcia, Fernando Fernandez-Aranda, 2023. Conceptualising ultra-processed foods high in carbohydrates and fats as addictive substances can contribute to efforts to improve health, argue Ashley Gearhardt and colleagues. Social, clinical, and policy implications of ultra-processed food addiction BMJ 2023; 383 doi: https://doi.org/10.1136/bmj-2023-075354 (Published 09 October 2023).

Increased understanding among mothers of how nutrition can improve the health and life chances of their babies may have the potential to improve nutrition in the first 1000 days, by reinforcing the motivation to introduce the changes encouraged in the cooking workshops.

Outcome 3: New social connections

Key messages:

- Participants reported a number of social and psychological benefits from the workshops, including making new friends, getting a break from their usual routine, doing something for themselves, feeling supported, and learning about other cultures.
- These benefits have the potential to increase the health, resilience and well-being of mothers of young children. This may, in turn, reinforce their motivation and energy to feed themselves and their young children well.

Participants in both groups appeared to have strong social networks. Many were active in their communities, and some were involved in social activism through the Equal Start Steering Committee. Nevertheless, making new social connections and spending time with other mothers with young children was an important part of the experience for most. On the feedback questionnaire:

- **87% (13)** scored 4 or 5 out of 5 **on 'I made new friends'.** [28]
- **80% (12) said their health and well-being increased** as a result of the workshops.

Many participants voiced that coming together with other mothers and babies was a **change from their usual routine, an opportunity to get out of the house and be with other mothers, to do something for themselves:**

> *"Most of all I get some time out for myself……from being busy, the same routine, we have the same routine…. [this is] fun, we get some friends…….we do some creative activity like cooking, and food, that's the most important part of our lives…".*

Some experienced the workshops as a supportive environment, saying:

> *"There's the psychology effect….you can have a moment for yourself, you can have a moment to discuss with other people, we have good support…it's really a nice feeling".*
>
> *"….even when [life is] stressful, with this company you forget about what's waiting for you".*
>
> *"It's like a little weekend in the middle of the week".*

One recognised that early motherhood can be an isolating time for some, and that the workshops can help with making connections among mothers of young children:

> *"It gives the opportunity for anyone who is looking to make new connections, for example an isolated mother….".*

The cross-cultural nature of the workshops, the opportunity to learn about people from other countries and their cuisines was also highlighted. Many participants said they would miss the workshops and the opportunity to meet with each other, and hoped to stay in touch with each other:

[28] Scores ranged from 1 to 5, with 5 being high.

"Really, I'm gonna miss it….. we got used to it and we don't want to stop…..[it's] a nice group, nice and kind, you want to see them again and again".

The **social and psychological benefits** reported have the potential to increase the health, resilience and well-being of mothers of young children who do not have many opportunities to do something for themselves and to exchange experiences with other mothers. This may, in turn, reinforce their motivation and energy to feed themselves and their young children well.

Research question 4: What benefits did participants gain from the pilot programme, and were there any drawbacks? How can the programme be improved in order to meet the needs of pregnant women and mothers with young children in OX4 in relation to nutrition in the first 1000 days?

The information for this research question comes from the same sources as the information for research question 3. However, **the focus here is on the implementation process, as opposed to the outcomes discussed under research question 3.**

Key messages:

- Participants reported a number of benefits related to the way the programme was implemented: childcare, cooking and eating lunch together, emotional support, the location, the voucher, and developmental benefits for their children.
- Suggestions to improve the programme included: clearer promotional information, wider advertising, a later start time, and considerations around duration of the workshop series.
- Suggestions for future programmes included: running term-time workshops throughout the year, using a booking system, charging a small fee to cover some costs, running evening sessions for women unable to attend during the day, and running refresher sessions for past participants.

Benefits identified by the participants.

The online questionnaire asked participants if their initial expectations had been met:

- **100% (15) said their expectations had been met and 27% (four) said their expectations had been surpassed.**

Many of the benefits for participants have been described under research question 3 on outcomes. In addition, participants noted the following benefits.

- **The childcare was a key benefit,** giving mothers a few hours off to do something they enjoy without having to also care for their children.
- **Working as a team cooking together** was identified as one of the most enjoyable aspects of the workshops. Participants noted that it felt quite different to cooking at home while having to watch their children, which is often stressful and means they are unlikely to experiment with new recipes.
- **Having lunch together** was seen as a benefit, not only for the company, but because it was one less meal to prepare at home:

- **Some recognised the emotional support** they experienced during the workshops, through the opportunity to talk openly about topics that worry them such as child feeding, the pressures of feeding their families, and the pressures of a 'cost of living crisis'.
- **Spending time on Oxford City Farm** was seen as a benefit by all. Many participants didn't know about the farm prior to the workshops. They were keen to visit more often, and one signed up as an animal care volunteer:

  "[I] really liked the Farm, I live around here but I didn't know about it. Especially for kids, they love it – everything for them is interesting, animals, playground, toys, its really like heaven for children".
- **The voucher** was identified as an important benefit for Group 1 participants. Some said they would have come without the voucher, but others said they might not have. Group 2 participants reported that the voucher was not important, and they would have come anyway. The difference may be at least partly due to a difference in promotion and recruitment for, and the composition of, the two groups. The flyer for Group 1 informed potential participants that they would receive vouchers. The flyer for Group 2 did not, which may have attracted participants for whom other benefits were a priority.
- Some recognised that the workshops also brought important **benefits for their children,** learning to play together from a young age, and having some time away from their mothers. One participant felt that that the experience had made her son's transition to nursery smoother than with her first son, because he was already used to being among other people.

Drawbacks and suggestions for improvement.

When asked about drawbacks and what they had 'least enjoyed' about the workshops, most participants said there weren't any drawbacks, and that they had enjoyed just about everything about the experience. A few identified drawbacks and ways to improve the programme:

- **Clearer information in promotional materials**. Some participants were not sure what to expect of the workshops. One, for example, was not aware that the workshops would involve cooking (she was glad that they did). This applied mainly to Group 2, and likely reflects that, unlike most in Group 1, they did not have prior information through contact with the Equal Start Steering Committee.
- **Advertise more broadly**. Some only knew about the workshops through their friends and family members. They felt that the workshops could be advertised more broadly using social media and What's App groups, in order to reach women who might not hear about them through their social networks.
- **Time of the workshops.** Quite a few participants felt that the start time (9.30am) was too early, and they felt rushed and stressed trying to arrive on time. Most agreed that 10am to 1pm would work better, as it would allow for the school drop-off in the morning, and give mothers a bit of spare time before picking children up from school in the afternoon.
- **Duration of the workshop series.** Most participants were happy with the eight-week duration, and several would have liked the workshops to go on for longer. One participant felt that eight weeks was a big commitment. She was busier than some of the other participants, working part-time out of the home in addition to caring for her first baby. She suggested four or five weeks would be enough time to learn about nutrition and cooking. Some women who declined to sign up for the workshops also cited the 8-week commitment as a barrier to participation.

Some participants had ideas on how a future programme might be organised. These included running workshops during term time throughout the year and using a booking system to sign up; charging a small fee for attendance to cover some costs; running evening sessions for first time pregnant women who are working and unable to attend daytime sessions; and running refresher sessions for past participants to encourage them to continue to introduce changes.

Research question 5: What did we learn about conducting community-based research in this context- what worked well and what were the challenges?

Key messages:

- Our research was community-based insofar as it was place-based, was driven by community priorities, draws out local knowledge, was commissioned to improve local services, and provides recommendations that can create meaningful local change.
- The community-based character of the research could be strengthened in future if it is conducted by community researchers and co-produced with the community.
- What worked well included: the research was less extractive than other forms of research as there were tangible benefits for participants; participants were highly engaged as the topics had the potential to improve their children's health; the research provided a forum for participants to learn from each other; and the extended timeframe allowed the researcher to build trust and develop an in-depth understanding.
- The challenges included: difficulties managing time and following a planned line of inquiry, distractions created by the need to attend to children, and poor audio recordings due to the noisy environment.

'Community-based research' is a broad term used to describe different ways of doing research and using research findings. It encompasses a spectrum of approaches with differing definitions of 'community' and differing levels of participation, empowerment and control.[29] It has received greater attention in recent years from public sector service providers and policymakers who recognise that to address widening health inequalities in the UK, policy decisions must be informed by local knowledge and lived experience.[30]

Our research can be conceptualised as 'community-based' by the following characteristics:

- It is place-based – 'the community' is a territory defined by the OX4 postcode, and within that territory is a particular community of interest – mothers and young children from disadvantaged and culturally diverse backgrounds.
- It was driven by community priorities identified by the OX4 Food Crew and the Equal Start Steering Committee.

[29] Healthwatch Oxfordshire, October 2023. Community Research in Oxfordshire – an overview. https://healthwatchoxfordshire.co.uk/wp-content/uploads/2023/11/Healthwatch-Oxfordshire-community-research.pdf.

[30] See for example, New Local (2021) The Community Paradigm. Why public services need radical change and how it can be achieved. https://www.newlocal.org.uk/publications/the-community-paradigm/; Health Foundation and Institute of Health Equity (2020) Build back fairer: The COVID-19 Marmot Review https://www.instituteofhealthequity.org/resources-reports/build-back-fairer-the-covid-19-marmot-review/build-back-fairer-the-covid-19-marmot-review-full-report.pdf.

- It highlights insights into local needs by drawing out local knowledge and elevating the voices of community members.
- It was commissioned by local, community-based organisations to improve local services within a human-centred design approach.
- It is oriented towards policy and practice recommendations that can create meaningful change in the local community.

There are ways in which the community-based character of the research could be strengthened in future rounds, in order to increase community control over the research process and outcomes:

- Recruiting, training and paying researchers of the community of interest to undertake research, with support from relevant organisations.
- Co-production (involving community representatives and relevant organisations) at all stages of the research process, from setting the research agenda, identifying research questions and methods, collecting and analysing the data, and identifying solutions for implementation.

The OX4 Food Crew and the Equal Start project are testing different approaches to local community-based research. **Our experience may help to inform future community research.** Below we outline what worked well, and the challenges we faced.

What worked well

- **Combining research with the cooking workshops ensured there were tangible benefits for participants.** This helped to make the research less extractive than some more traditional forms of research where the purpose is solely to collect information.
- There was a **high level of engagement** with the research. This was likely due because the research activities represented an opportunity to listen to and learn from each other on a topic of interest, with the potential to improve their young children's health.
- The research activities functioned not only as a 'data collection' exercise, but also as a **forum for mothers to exchange views, learn from each other, and support each other.**
- The extended timeframe for the research – 16 sessions of three hours, including the time for cooking and eating[31] – provided **significant time for the researcher to build trust and develop an in-depth understanding** of the determinants of nutrition in the first 1000 days among workshop participants.

The challenges

- **Conditions were sometimes chaotic, making it difficult to manage time and follow a planned line of enquiry.** There was a lot of 'coming and going' during the research activities, with some participants arriving late or leaving early, needing to finish cooking activities, or attending to children. The conditions reflect the nature of life with small children, and are likely to be common to research conducted in the community. The extended duration of the research helped to mitigate, as gaps could be filled in later sessions.
- **Keeping participants focused on research activities was sometimes challenging** if they were distracted by a crying child, the need to breastfeed etc. This was a trade-off to keeping mothers and children together, and likely had more benefits than drawbacks in terms of enabling mothers with infants to feel they could participate.
- **With young children playing in the same space as the research activities, the sessions were inevitably noisy**. The main implication was that some audio recordings were of poor quality,

[31] Around 36 hours of direct contact with participants, as the researcher was absent during some sessions.

particularly during Group 2, when the research was conducted indoors. Notes made by the researcher immediately following the session helped where recordings were poor.

5. Discussion

5.1 Overarching research question

The overarching question we set out to answer was:

> "Does a programme that combines cooking and nutrition education *have the potential* to improve nutrition in the first 1000 days among women and children from disadvantaged backgrounds and diverse cultural backgrounds in OX4?"

Our research suggests that participants experienced an improvement in knowledge, skills and confidence relevant to nutrition in the first 1000 days. Participants reported positive benefits and outcomes, described under research questions 3 and 4. These benefits came about even though the participants already had relatively strong cooking skills and some understanding of basic nutrition. The knowledge and skills they acquired, and their intention to apply what they learned, suggest that the programme may have the potential to help families to **improve nutrition in the first 1000 days through greater healthy dietary diversity, (particularly more vegetables and plant foods), and reduced consumption of animal source foods, fat, salt, sugar, and highly processed foods.** If well-targeted, the programme may have the potential to help reduce food poverty and poor quality diets, and tackle diet-related poor health and health inequalities, among families from marginalised communities and disadvantaged backgrounds in OX4.

The social and psychological benefits reported by participants may also have the potential to contribute to improved nutrition in the first 1000 days, **if greater resilience and well-being among mothers with young children enhances their motivation and energy to feed themselves and their young children well,** although it is questionable how long these benefits would endure after the workshops.

It is possible that these benefits would be magnified for pregnant women and mothers of young children with weaker cooking skills and confidence and more limited understanding of nutrition, and those struggling with food poverty and the cost of living. The benefits may also be stronger for mothers of young children with weaker social networks, for whom the isolation experienced by many mothers after the birth of a baby may be more pronounced. However, the programme may need to address additional barriers for such women to benefit, such as lower confidence or self-efficacy to introduce changes, or a lack of support in the home, as well as difficulties reaching and recruiting such women.

These conclusions should be understood in the context of the limitations described in section 3: the sample of women was small and not representative of other pregnant women and mothers in OX4; the information is self-reported, and survey responses were not anonymous, so there may be some reporting bias in the data; and we have not measured changes in dietary intake or nutritional status, so are unable to say whether nutrition improved among participants and their young children.

When we asked participants **if there is a need for this kind of programme – if they believed others in their communities would benefit** – they replied strongly in the affirmative, pointing to the need for better cooking skills and nutritional knowledge, help with the cost of living, and wider social benefits:

> *"Cooking is a skill that a lot of people don't focus on, it's a very important skill…. I think lots of women would show up".*
>
> *"There's so many benefits, you're talking about nutrition, focusing on learning how to provide the best first 1000 days, and [the children] are having fun, you're socialising….I feel like its ticking a lot of boxes for mums….".*

Participants suggested that the programme may be most beneficial for new mothers who have recently had their first child, or pregnant women about to have their first child.

A key question is whether the benefits are likely to endure and to trigger wider health benefits? **Participants at the sensemaking workshop – six months after completion for Group 1 and two months after completion for Group 2 – reported that they had made important changes to their food choices and cooking as a result of the workshops**, including using more vegetables and salads, more beans and pulses, and less oil and salt, and preparing a wider variety of meals and healthy snacks. They also acknowledged that they faced some **barriers when trying to introduce changes**, including: resistance to new foods among some family members, mainly husbands and older children; young children's aversion to trying new foods, especially vegetables; the influence of what children from other families eat on their own children's preferences; time constraints, particularly for those that returned to work after maternity leave; and the expense of buying more vegetables and some specialist ingredients, although this was partially off-set by buying less meat and fish.

Asked at the sense-making workshop **whether they believed the changes they have made could help to improve family nutrition and health**, participants provided several examples:

- Some believed that more varied meals and snacks were helping to enhance their children's interest in and enjoyment of food – they were less bored with repetitive meals – and that the changes they had made were helping to shape healthy early taste preferences.
- Several women said they had lost some weight, and believed that this was at least in part because they were using less oil in their cooking and found that pulses and salads helped them to feel full for longer.
- One husband had reduced his blood pressure medication four months after conclusion of the workshops, and it was believed this was due, at least partly, to the lower salt in home-cooked meals.
- One diabetic husband was finding his diabetes easier to control with lower sugar snacks.
- Some husbands had reported feeling better on meals made with less oil, and disliking meals they had previously enjoyed at relatives' homes.
- Participants also pointed to 'ripple effects' on extended family, as they have shared new knowledge and skills, and to some degree influenced others to make different food choices.

These responses **suggest that the programme may have the potential to positively impact the nutrition and health of participants' nuclear and extended families beyond the first 1000 days.**

5.2 Other kinds of support for mothers with young children in Oxford

In the course of our research, our participants identified **other kinds of support and activities – not related to nutrition – that are needed in Oxford for mothers with young children**. These included:

- More leisure spaces for mothers and children to relax and play together, including indoor play areas for wet and cold days, accessible by public transport.
- More organised activities for children under five, and for older children in the holidays.

- More spaces and groups for mothers to come together, meet new mothers, and share experiences, in their local community.
- Community facilities such as libraries and leisure spaces, as well as primary health care services (GPs, dentists), closer to where people live, for families without private transport.
- Support for mothers to develop income-earning activities and small enterprises, including help setting up food-related small businesses and getting relevant qualifications.
- More frequent bus services on key routes, particularly from OX4 neighbourhoods to supermarkets and the city centre.

Some participants also identified **wider concerns that impinge on their ability to provide their children with a healthy start in life**:

- More affordable childcare, and more childcare spaces, to free up income for other needs (including good nutrition) and allow mothers who want to, to go back to work.
- More affordable, and better quality, social and rental housing, with adequate kitchen facilities to allow families to cook, and controls to prevent mould.
- A higher living wage in Oxford, given high housing and other costs in the city.

6. Recommendations

6.1 Recommendations for implementers of the pilot programme.

Based on our findings and participant feedback, implementers may consider a number of adjustments, should the programme be implemented in the future:

Targeting, promotion and recruitment.

Promotion and recruitment strategies may need adjusting in order to reach participants who are likely to benefit the most. This may include working more closely with local organisations and community leaders with reach into different communities, and 'snowballing', by asking initial recruits to identify others who they think may benefit. One participant, a trained midwife, suggested recruiting through maternity healthcare where, she reported, pregnant women tend to be receptive to information on how to ensure they have a healthy baby. Some adjustments to the programme may help to encourage specific groups to participate, for instance support for participants with poor English language skills, or groups dedicated to participants from one country.

Time of day.

According to participant feedback, **10am-1pm seems to be the best timeframe** for mothers with young children. It may be worth considering running workshops in the evening to reach pregnant women who are working and mothers who have returned to work soon after the birth of a child.

Duration.

It may be worth **experimenting with the duration of the workshop series**. A shorter duration would cost less, and allow the programme to reach more women with the same level of resources, as well as encouraging participation among women reluctant to commit to eight weeks. There may be a trade-off, though, if some of the social benefits are lost in terms of creating a safe space and lasting social connections, both of which require time.

More structured content on nutrition.

Offering more structured content on nutrition may help future participants with limited nutritional knowledge feel motivated to introduce changes encouraged during the cooking workshops. This could include focused sessions on diet during pregnancy and infant feeding, and diet during preconception could be added, given its importance for child health. This could be achieved by bringing in professionals with expertise in the first 1000 days and relevant services in OX4 - for example, midwives, and health visitors. This would be in addition to ensuring that workshop facilitators have expertise in nutrition. Content could be tailored to participant interests and level of knowledge at the start of the workshops.

Facilitating group discussions in a safe space.

Some of the benefits experienced by participants came from the group discussions undertaken for the research, as these provided a **safe space for participants to exchange experiences, discuss anxieties, and offer each other emotional support**. The programme does not necessarily need a research component to meet the objective of improving nutrition in the first 1000 days in OX4, but learning and sharing sessions should be built into programme design.

Address barriers to change.

Barriers to introducing changes included the dietary preferences of older children and male partners, time constraints for working mothers, and the additional expense of some ingredients. **Discussions during the workshops could help participants to anticipate difficulties and devise strategies to overcome them**. Other barriers to healthy eating included low energy, time constraints and stress for pregnant women and mothers of young children. There may be a case for considering cooking programmes for male partners and fathers who can help with food preparation.

6.2 Policy recommendations

The following recommendations are derived from our research findings.

Developing a healthy local food culture for the first 1000 days.

- **Support programmes to improve cooking skills and confidence** targeted at pregnant women and parents of young children in order to improve nutrition in the first 1000 days and improve the long-term health and life chances of children. Programmes may be standalone, as this pilot, or integrated into existing services and programmes. Consider programmes that can reach male partners and fathers, given that mothers may struggle to cope with food preparation during pregnancy and the early stages of motherhood.
- **Support the evaluation of cooking programmes to test their effectiveness in improving nutrition in the first 1000 days**, and share best practice findings across providers (local non-profits, community food networks etc.).
- **Promote opportunities for families with young children to cook and eat together.** This may be built in to cooking skills programmes, or operate independently of the need to teach cooking skills, given the value of shared meals in creating vibrant and resilient communities that appreciate the importance of good food.
- **Support local spaces with kitchen facilities** for activities which include cooking and eating together, for instance in community centres, local non-profits, schools and colleges. Some participants wanted access to space to batch cook together, preparing meals in a collaborative environment to take home and use through the week.

Improving access to healthy affordable food and developing the local food economy.

- **Improve access to healthy and affordable food in local neighbourhoods**. Participants identified a lack of outlets for fresh farm produce and fish in particular. Consider ways to bring locally-grown produce to residents through short supply chains.
- Promote and support the **development of local food enterprises by women from marginalised communities**. Such enterprises can help to tackle low incomes and food poverty by providing flexible livelihoods for women with young children, while also improving access to healthy food in local communities and contributing to the local economy and community resilience.

Improving public services and support in the first 1000 days.

- **Find ways to ensure that NHS guidance on diet during pregnancy, exclusive breastfeeding and child feeding reaches more marginalised communities**. Provide leaflets in English and other languages commonly used in Oxford, and distribute through local organisations with reach into marginalised communities. Ensure that patients are aware of their rights to an interpreter when accessing NHS services.
- **Promote Healthy Start vouchers to ensure that those who are eligible take them up.** This may involve collaborating with community food networks and maternity health services with reach into more marginalised communities. Consider ways to protect the quality of children's diets among families on low incomes that are not eligible for Healthy Start vouchers.
- **Seek more ways to support healthy early child development, and/or fund local non-profits to do so,** through more accessible, community-based facilities and services, including indoor play areas, and more activities for young children and mothers. Bring primary healthcare services closer to where people live.
- **Facilitate the dissemination of information on mother and baby services and activities in Oxford.** A directory of activities and services on a user-friendly app may be the easiest way for busy mothers to access information.
- **Take measures to make childcare and housing more affordable, improve the quality of social and rental housing, and provide a higher living wage in Oxford,** as enablers of healthy early child development and better quality diets.

Community research to support policy decisions.

- **Support community research that brings community voices and lived experience to bear on food systems and health services policy decisions related to the first 1000 days.** Use research to explore discrimination in health services as one determinant of poorer health outcomes among some population sub-groups.

6.3 Recommendations for future research

Our research has provided evidence that the Starting Stronger Together programme may have the potential to improve nutrition in the first 1000 days among families from disadvantaged and culturally diverse backgrounds in OX4. **If a follow-on programme is implemented, evaluation could be conducted to provide robust evidence of the effects of the programme on nutrition in the first 1000 days:**

- **A future evaluation should be guided by a clear Theory of Change** highlighting the potential mechanisms through which the programme components might achieve their intended effects, and identifying key assumptions about the way change is expected to happen.
- A robust evaluation design should include measurement of changes on key outcomes using validated tools in a pre/post design. With sufficient resources, **measurement of changes in dietary intake and nutritional status would provide robust evidence on the effects of the programme on diets and nutrition in the first 1000 days.**
- It would also be important to explore the mechanisms through which any observed changes occur (i.e. which components of the programme are effective in creating changes), and the degree to which these are expected to be reproducible in similar contexts.

Further clarity is needed on how to identify and recruit the population groups most likely to benefit from a future programme, as well as the optimal timing and delivery of the programme for such women:

- **Co-design of the programme with members of target communities would help to refine implementation strategies,** and to anticipate the barriers that women may face in introducing changes in the home.
- Programme co-design, and further research, could be undertaken with **researchers from the communities of interest,** including some of the women who participated in the pilot.
- Further research would benefit from a **review of the evidence base for nutrition education programmes during pregnancy and the postpartum period**, in order to identify elements that might be suitable for a future programme for the OX4 context.