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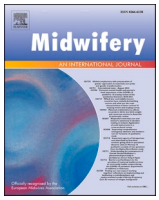

Development, acceptability and feasibility of a community-based intervention to increase timely initiation of antenatal care in an area of high ethnic diversity and low socio-economic status in the UK

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ABSTRACT

Background: Antenatal care plays an important role in preventing adverse maternal and new-born outcomes. Women from ethnic minority backgrounds and of low socio-economic status are at greater risk of initiating antenatal care later than the recommended 10 weeks. There is a paucity of research exploring the development and evaluation of community-based interventions to increase the timely initiation of antenatal care.
Objective: To develop and evaluate the acceptability and feasibility of a co-produced community-based intervention to increase uptake of antenatal care in an area with high ethnic diversity and low socio-economic status.
Design: The intervention was developed using co-production workshops and conversations with 20 local service users and 14 stakeholders, underpinned by the theory of Diffusion of Innovation. The intervention was evaluated, on the domains of acceptability, adoption, appropriateness, and feasibility. Questionnaires (n=36), interviews (n=10), and focus groups (n=13) were conducted among those who received the intervention. Observations (n=13) of intervention sessions were conducted to assess intervention fidelity. Quantitative and qualitative data were analysed using SPSS and NVivo software respectively.
Results: Over 91% of respondents positively ranked the intervention. Qualitative findings with respect to 'acceptability' included four subthemes: how the intervention was communicated, the characteristics of the person delivering the intervention and their knowledge, and the reassurance offered by the intervention. The 'adoption' theme included three sub-themes: being informed helps women to engage with antenatal care, the intervention provides information for future use, and onwards conveyance of the intervention information. The 'appropriateness' theme included three sub-themes: existing gap in information, nature of information given as part of the intervention, and talking about pregnancy in public. The 'feasibility' theme included two sub-themes: value of delivering the intervention in areas of high footfall and relational aspect of receiving the intervention. Observations showed intervention fidelity of 100%.
Conclusion: The community-based intervention, coproduced with women and maternity care stakeholders, was positively evaluated, and offered an innovative and promising approach to engage and educate women about the timely initiation of antenatal care in an ethnically diverse and socio-economically deprived community.

Introduction

The most recent inquiry into maternal deaths in the UK showed an over-representation of women from ethnic minority backgrounds who were also living in the most socio-economically deprived areas of the UK and Ireland (Knight et al., 2022). The enquiry revealed that maternal mortality rates were over three times higher among women from Black backgrounds and almost two times higher among women of Asian backgrounds, and that maternal deaths were more than four times higher among women living in the highest deprivation quintiles than

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those in the lowest (Knight et al., 2022). Multiple adversities impact perinatal outcomes; a recent surveillance report into perinatal mortality showed that neonatal mortality and stillbirth were highest among babies from ethnic minority backgrounds whose mothers lived in deprived areas (Draper et al., 2022). High quality antenatal care is known to play an important role in improving maternal and neonatal outcomes (World Health Organization, 2016). In the UK, it is recommended that women initiate antenatal care by 10 weeks of pregnancy (NICE, 2021). The number of recommended appointments varies according to women's circumstances; the World Health Organization (2016) states that pregnant women should receive a minimum of eight antenatal appointments, commencing by 12 weeks of pregnancy. Early initiation of antenatal care is important in identifying pregnancy-related complications and provides an opportunity for health education and promotion (Moller et al., 2017). Importantly, it can also enable a trusting relationship between health professionals such as a midwife and women, early on in pregnancy (Dahl et al., 2020). Some studies have noted excess maternal deaths among women who started antenatal care late, especially among those with social or biological vulnerabilities (Knight et al., 2018; Knight et al., 2022; Nair et al., 2015; Raatikainen et al., 2007).

The National Institute for Health and Care Excellence (NICE) recognises the need for improved access to antenatal care and ongoing contact with care providers for women with complex social backgrounds (NICE, 2010). Women from ethnic minority backgrounds in England and Wales are more likely to initiate antenatal care late than white British women, and this is also the case for women living in areas of high social deprivation (Public Health England, 2020). A recent study by Puthussery et al. (2022) examined the relationship between ethnicity and initiation of antenatal care and found that non-white British ethnicity was strongly associated with late initiation of antenatal care, with Black African women being the ethnic group most likely to initiate antenatal care late. Another recent study found that women born in sub-Saharan African countries were more likely to initiate antenatal care late in Belgium (Schonborn et al., 2022). Qualitative studies have sought to identify the barriers to accessing adequate antenatal care. A recent systematic review on ethnic minority women's experiences of accessing antenatal care in high-income European countries demonstrated the multifaceted and cyclical nature of initial and ongoing access to antenatal care for ethnic minority women, and highlighted a range of structural and organisational factors playing a significant role in women's ability to access antenatal care (Sharma et al., 2023). Another systematic review of qualitative evidence reported that having a positive experience of antenatal care, from known, kind, and flexible care providers, positively impacted ongoing attendance at antenatal care appointments (Downe et al., 2019). Language barriers and unfamiliarity with the maternity care system impacted engagement with maternity services for women from Black and minority ethnic (BME) backgrounds in the UK, especially for refugees and asylum seekers (Rayment-Jones et al., 2019).

There is a paucity of research seeking to examine the development and/or implementation of interventions to promote timely antenatal care initiation in high-income contexts. Hollowell et al. (2012) reviewed studies that explored interventions to increase the timely initiation of antenatal care. The studies were primarily conducted in the United States, and while the authors identified a range of barriers to early initiation of antenatal care experienced by BME women in the UK, they concluded that many of the 'promising' approaches identified would require further development and testing before they could be implemented (Hollowell et al., 2012).

To the best of our knowledge, there have been no published studies specifically exploring the development and examining the acceptability and feasibility of a community-based intervention to increase early initiation of antenatal care in a high-income country. This study aimed to develop and evaluate the acceptability and feasibility of a community-based intervention, coproduced with local service users and stakeholders, to increase timely initiation of antenatal care.

Methods

Study Design

In this study, we employed a mixed-methods design comprising quantitative and qualitative methods to assess the acceptability and feasibility of the community-based intervention.

Setting

This study was conducted in Luton, UK. Luton is a town with a population of approximately 213,000 with an overall life expectancy lower than the national average (Holmes, 2022). It is in the top 25% most deprived boroughs in England with three areas of the borough being in the top 10% most deprived areas (Holmes, 2022). Over half of Luton's population are of ethnic minority background, with 33.8 of residents having been born outside the UK (Holmes, 2022). The population is served by a tertiary hospital, which provides maternity services to the local area.

The intervention was delivered between November 2021 and September 2022, and four areas with the highest deprivation indices in Luton were targeted to receive the intervention. Prior to implementing the intervention, a mapping exercise was undertaken to identify areas of high footfall, community organisations, and other relevant community spaces, to inform locations for intervention delivery. Three Antenatal Care Champions, who were final-year student midwives and newly qualified midwives, were recruited and received training on intervention implementation and communication skills. In areas of high footfall (including shopping areas, a nail salon, local authority community centres, libraries, and a leisure centre), the intervention was delivered by Antenatal Care Champions by engaging with members of the public on an individual basis. In community organisations (including a gurdwara and a community organisation working with the local Roma population), group intervention sessions were held, facilitated by the first author.

Outcome measures

The overall outcomes we were aiming to measure in this study were acceptability (the extent to which the intervention is considered to be agreeable or satisfactory (Proctor et al., 2011) and feasibility (the extent to which the intervention can be conducted in the specific setting (Proctor et al., 2011). The questionnaire and qualitative topic guide were developed to address aspects of acceptability and feasibility according to the evaluation framework proposed by Proctor et al. (2011). Questions were developed to elicit perspectives on the acceptability of the intervention, including the extent to which (1) the length of the intervention session was suitable, (2) the presentation style of the Antenatal Care Champion was acceptable, and (3) the venue in which the intervention was delivered was satisfactory.

Study tools

In conjunction with the multi-disciplinary internal project team, and a stakeholder forum, a quantitative questionnaire with closed-ended questions was developed to ascertain the acceptability of the intervention, which was distributed among those receiving the intervention. Respondents were asked to rate various aspects of the intervention on a 4-point Likert scale, which was designed to be easily understood. These included nine questions about the extent to which the content of the intervention session was helpful, worthwhile, and was of the right duration, in addition to the extent to which the intervention was well-delivered in a suitable location, with any follow-on questions from participants sufficiently answered. To enhance validity, a small pilot was conducted with non-participants, and minor amendments were made. Additionally, the first five questionnaires completed by participants

were checked for validity and no further adjustments were required. To examine the questionnaire's consistency and reproducibility, we computed reliability coefficients using Cronbach's alpha. The correlations between the items ranged from 0.31 to 0.97, with an average of 0.80, indicating good internal consistency. The Cronbach's alpha coefficient was 0.92.

An implementation fidelity checklist was developed to score intervention in-vivo observations. The checklist measured the extent to which the Antenatal Care Champion adhered to the intervention script, and their competence in delivering the intervention, on a scale of one to three (Breitenstein et al., 2010), and results were reported as a percentage of the adherence and competence scores which were most favourably scored.

We developed a semi-structured topic guide, to facilitate qualitative interviews and focus group discussions (FGD), to explore participants' experiences of receiving the intervention, their opinions about its acceptability and feasibility, and ideas on how the intervention could be developed in the future.

Data collection

Data collection took place between November 2021 and October 2022. The intervention was offered to all members of the public and therefore we did not apply inclusion or exclusion criteria to those receiving the intervention. The intervention was delivered during school hours, and therefore school-aged children under the age of 18 were not expected to be in public areas. Those who did not speak English were not excluded, as sometimes they were accompanied by an English-speaker who translated for them, and in group sessions, a translator was present. However, those who could not speak English and had no means of translation self-excluded from the intervention by simply not engaging with the Antenatal Care Champions in the first instance. Convenience sampling was used to recruit participants for the completion of the questionnaire and for interviews or FGDs. Inclusion criteria for participation were as follows: have received the intervention, were over the age of 18 years, and were willing to take part. Individuals who had received the intervention were invited to complete the questionnaire straight afterwards, which was returned in an envelope to protect anonymity. Intervention recipients were also offered the opportunity to participate in the qualitative telephone interview or an in-person FGD. Interviews took place via telephone, and FGDs took place in the setting where the intervention group session had been conducted. Participants were recruited for this qualitative component of the study until interviews and FGDs revealed data saturation. Both were audio recorded and transcribed, and participants were given a small token of appreciation for their time. Interactions between Antenatal Care Champions and recipients of the intervention were observed in order to complete the intervention fidelity checklist.

Intervention development and implementation

The aim of the intervention was to explore the feasibility and acceptability of a community-based approach to increase timely initiation of antenatal care. We adopted a co-production approach, in order to develop a tailored and locally-relevant intervention, which was subsequently assessed for acceptability and feasibility.

Co-production approach

We used a co-production approach, using a series of co-production conversations to develop the intervention and supporting materials. Co-production has been described as, "working together in equal partnership and for equal benefit that is underpinned by living out the core values of being human, inclusive, transparent and challenging." (Co-production Collective, 2020, p.3) Co-production encompasses values including learning collaboratively, respecting and valuing all perspectives and sharing power so that no one group is thought of as having 'expert' knowledge (Co-Production Collective, 2020; Hickey et al., 2018). This approach enabled us to develop the intervention with the community whom the intervention was designed to serve. We engaged with a range of professionals (n=12) working with pregnant women in the local area (including midwives, early years providers, young parent support workers, and healthy lifestyle workers). We also recruited local service users (n=20) – women and partners who were currently engaging with, or had previously engaged with antenatal care in the past 2 years – through social media and local early years' providers. A combination of virtual workshops (due to Covid-19 restrictions) and individual conversations were held. To ensure representation, we recruited service users from a diversity of ethnic backgrounds - six described their ethnicity as Asian or Asian British, three as Black African or Caribbean, two as having multiple ethnicities, four as white British or white other, and five did not state their ethnic background. A gift voucher was given to service users who took part in the co-production in recognition of their contribution and time.

The co-production conversations which took place with professionals and service users highlighted the existing gap in early pregnancy support and information, challenges in knowing how to access antenatal care and the important role friends and family members play in providing women in early pregnancy with information about how to initiate antenatal care. In addition, it was highlighted that any written material should be concise and humanised, with the use of images to convey messages.

Intervention development

We used the Diffusion of Innovations model (Rogers, 2003) to underpin the intervention development, which aimed to change behaviour concerning early initiation of antenatal care (see Figure 1). This model, in which a change agent is vital in influencing an individual to take up the innovation via a process of communication places behaviour change within social structures, which makes it well-placed to inform a community-level intervention development.

The co-production conversations were aggregated and grouped according to the message (what are the key messages that need to be communicated as part of the intervention?), the method (how are the key messages conveyed?), and the medium (what sources or materials can be used to convey the key messages?), to further develop the intervention.

Based on these three questions, an intervention script was developed, for both individual and group intervention sessions. The key messages here included why early initiation of antenatal care is important, how to access antenatal care, and information about support in early pregnancy. A small team comprising of two final year student midwives and a newly qualified midwife from different ethnic backgrounds were recruited and trained as volunteer Antenatal Care Champions, to deliver the intervention along with the Research Midwife. A range of promotional materials, including postcards and posters, were developed and translated into the four most widely-spoken community languages (Bengali, Urdu, Polish, and Romanian). A mapping exercise of local areas of high footfall and community organisations within the study's locality was carried out to establish the locations for intervention delivery. There were significant challenges in identifying and contacting community organisations. Some had relocated or closed during the Covid-19 pandemic and others had severely cut their in-person programmes.

The key features of the intervention were that (1) it was co-produced with local women, families, and stakeholders, and therefore highly tailored to meet the needs of the local population, (2) it was community-based, (3) it was designed to be delivered through one-to-one sessions in high-footfall public spaces or group sessions in community organisations, using the co-produced intervention script, and (3) the intervention sessions were supported by co-produced written materials. The expected

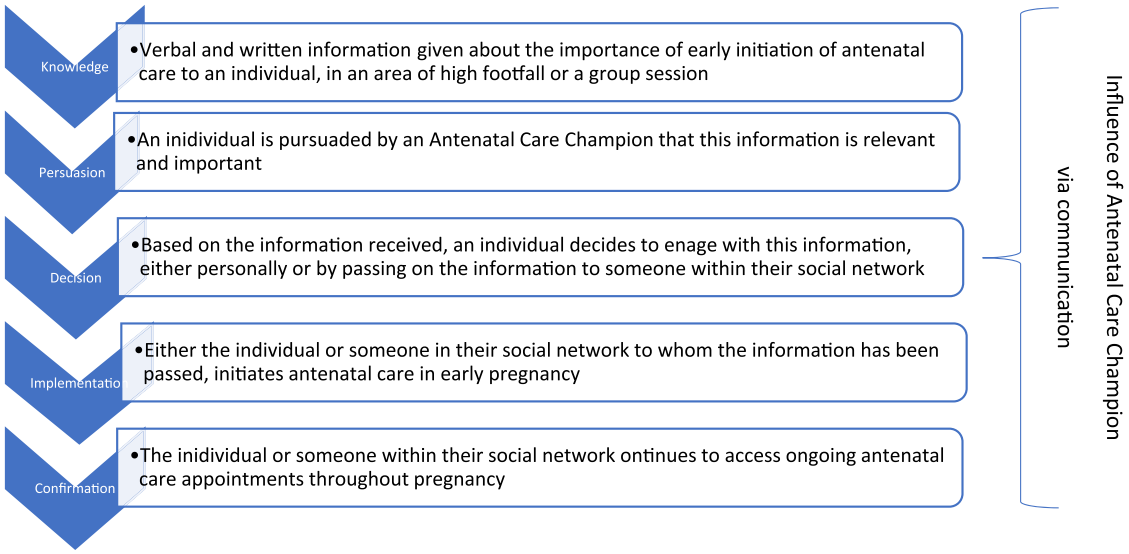

Fig. 1. Development of a community-based intervention to increase early initiation of antenatal care based on Diffusion of Innovations theory (Rogers, 2003).

outcomes of the intervention were acceptability and feasibility (which is reported in this paper), and effectiveness (the extent to which the intervention resulted in increased numbers of women initiating antenatal care by 10 weeks of pregnancy). Data is currently being analysed to examine the extent to which the intervention achieved the latter outcome.

Ethical considerations

This study was approved by the University of Bedfordshire Institute for Health Research Ethics Committee (reference number IHREC946). Participants gave their written consent prior to taking part in interviews or FDGs and data from all participants were guaranteed to be anonymous and confidential.

Analysis

Questionnaire responses were analysed in SPSS. Audio recordings of interviews and FGDs were transcribed verbatim. Thematic analysis (Braun and Clarke, 2022) was conducted by the first author (ES), in discussion with the second author (SP). Firstly, transcripts were read to enable familiarisation with the data. Secondly, data were coded inductively in NVivo v.12 (QSR International, 2018). These codes were then grouped according to implementation outcomes from the Proctor et al. (2011) framework. The framework proposes eight implementation outcomes, five of which were pertinent to this study: acceptability, adoption, appropriateness, feasibility, and fidelity (Proctor et al., 2011) Acceptability is the perception that an intervention is agreeable or satisfactory. Adoption is defined as the intention to take up a new practice. In this case, the 'practice' can be thought of as early initiation of antenatal care, either by the recipient of the intervention or those to whom the recipient passes on information about early initiation of antenatal care. Appropriateness is the perception of the intervention's ability to address an issue. Feasibility refers to the degree to which the intervention can be conducted in a given context and finally, fidelity is the extent to which an intervention is implemented as it was originally intended (Proctor et al., 2011). It is recognised that the researcher inherently shapes the qualitative research process, and therefore researchers reflecting upon this (reflexivity) is an important aspect of data analysis (Braun and Clarke 2022). During the analysis process, the first and second authors were conscious of their positions as being educated, middle-class, and knowledgeable about the maternity care system, resulting in social privilege, in spite of being of mixed or Asian ethnic backgrounds. This relative social privilege resulted in us being mindful of taking care to represent and amplify the voices of participants throughout the analysis process.

Findings

A total of 46 intervention sessions were conducted in areas of high footfall and 9 community group intervention sessions were held, reaching 514 people altogether (49 men and 465 women). Of the 46 sessions in areas of high footfall, 1575 people were approached to receive the intervention, of which 480 engaged with the Antenatal Care Champions, representing a 30.5% uptake. Antenatal Care Champions engaged with 10 women who were pregnant, three of whom had not initiated antenatal care. The group sessions were held in a gurdwara and a community organisation working with the local Roma population, where an interpreter assisted with translation.

Questionnaire analysis (n=36) showed that the intervention was overwhelmingly positively evaluated by the vast majority of participants, with regards to the content of the intervention session, its duration, and the extent to which questions were answered and it increased recipients' knowledge about how to access antenatal care. Furthermore, the presentation style of the Antenatal Care Champion and the venue at which the intervention was delivered were also evaluated as being 'very

Table 1
Intervention questionnaire results (n=36).

Question	%	Mean	SD
Overall, the content of the "Health Care in Pregnancy" session provided me with what I need to know.	strongly agree - 94.4%	3.94	0.23
My questions regarding health care in pregnancy were answered effectively.	strongly agree - 94.4%	3.94	0.42
The time length of the "Health Care in Pregnancy" session provided was suitable.	strongly agree - 91.7%	3.86	0.42
The "Health Care in Pregnancy" session was worthwhile.	strongly agree - 91.7%	3.92	0.28
The "Health Care in Pregnancy" session increased my knowledge of how to access health care in pregnancy.	strongly agree - 97.2%	3.89	0.52
The presentation style from the trainer	very good - 97.2%	3.94	0.33
The educational content of the session	very good - 94.4%	3.92	0.37
The venue for the session.	very good - 91.7%	3.92	0.28

good' by the majority of respondents. A summary of questionnaire responses is presented in Table 1.

A total of 23 people took part in the qualitative evaluation of the intervention, 10 participating in telephone interviews and 13 in FDGs. A summary of participant characteristics are presented in Table 2. Additionally, 13 intervention observations were conducted to assess intervention fidelity.

Acceptability

Analysis of the qualitative data showed four sub-themes of acceptability; (1) how the intervention was communicated, (2) the characteristics of the person delivering the intervention and (3) their knowledge, and (4) the reassurance offered by the intervention.

Participants felt that the Antenatal Care Champions were approachable, communicating clearly and listening actively. The approach from Antenatal Care Champions was felt to foster initial interest and a level of trust, which was particularly important in the context of engaging with people on a one-to-one basis in areas of high footfall.

> "I thought it was quite relaxed, at first I wasn't sure what was going on but [the Antenatal Care Champions] were very nice and approached me in a very friendly manner, I thought it was quite relaxing and I was able to take the information in." (Participant 6)

Another element of communication that was perceived as being important during intervention delivery was the relaxed approach adopted by the Antenatal Care Champions.

> "I really liked the communication, it wasn't forceful, it was really in a nice, friendly manner." (Participant 10)

The characteristic of the person delivering the intervention and their representativeness of the local diversity was seen as important.

> "I think maybe just becoming more visible for people, maybe like a group of diverse people to attract the audience and comfort them basically, let them know there is different people out there and you can talk to these people." (Participant 3)

A number of participants spoke about the reassurance provided by the intervention information, particularly in early pregnancy, which for some women can be a time of uncertainty. It was also suggested that receiving information from an Antenatal Care Champion could be more agreeable than engaging directly with the healthcare system:

> "I thought if there was someone in that situation [early pregnancy], they'd have to go to like the doctors or just somewhere that maybe could be a bit overwhelming for them, there's something like this [speaking to an Antenatal Care Champion] to help them, it was more welcoming and would make them feel more safe." (Participant 4)

One participant described the reassurance offered by the information on the intervention postcard:

> "… maybe people are going through some difficulties in life or maybe they just found that they're pregnant and find that they're struggling to go help from someone else, so this card is an example for them to be approached, "we are always here for you, the door's open…" (Participant 9)

These qualitative findings were echoed by questionnaire responses, in which 97% (mean 3.94, SD 0.368) of respondents rated the presentation style of the Antenatal Care Champion as being "very good"; 92% (mean 3.86, SD 0.424) felt that the intervention session was the right length of time; and 94% (mean 3.94, SD 0.42) of respondents strongly agreed that their questions regarding antenatal care were answered effectively during the intervention session.

Adoption

In our analysis, we found three sub-themes that point to the ways in which the intervention was taken up; (1) being informed helps women to engage with antenatal care, (2) the intervention provides information for future use, (3) onwards conveyance of the intervention information.

Participants perceived the intervention as a valuable source of information for women which would enable them to engage with antenatal care, as exemplified below:

> "I definitely know more and I was thinking if I would become pregnant, definitely I would go to Romania and have my pregnancy supervised there but now I feel a lot more comfortable to stay here." (Participant, FGD)

Participants spoke of the value of gaining information that can be passed on to others. In particular, the postcard with written information about the importance of antenatal care and how to access it was seen to be a useful medium for passing on information.:

> "They can give to their friends because … they don't know where they need to go, where they need to go with the link, too many ask me, my friend, everyone, they call me, "do you know to register to GP, to midwife or to GP?", too many and they don't know where they need to register, where they need to call." (Participant, FGD)

Additionally, there was a perception that the information would be passed on by word of mouth, spreading in the community: *"I think one way or the other, information travels" (Participant 5)*.

Appropriateness

We found the following three sub-themes relating to appropriateness: (1) the existing gap in information, (2) the nature of information given as part of the intervention and (3) talking about pregnancy in public.

Many participants felt that there is a lack of information about how to access antenatal care, particularly about how the referral system to antenatal care worked.

> "And nobody give this information to anyone, if you go to GP and ask, they don't give you anything, they just say to everyone, just complete online the link and that's it, they don't give anything to anyone if you go to GP." (Participant, FGD)

A number of women who had recently arrived in the UK expressed uncertainty about how the maternity system operated and even considered returning to their home country to receive antenatal care and give birth due to the lack of understanding. The information gained through the intervention gave them the confidence to access maternity care in the UK.

> "I was thinking to go in Romania… because I didn't know the procedure here and how the system works, so now I feel more comfortable [to use the UK maternity system]." (Participant, FGD)

Table 2
Characteristics of interview and FGD participants (n=23).

Participant characteristics		n=	%
Age:	18-24	9	39%
	25-34	12	52%
	45-54	2	9%
Ethnicity:	Asian or Asian British	3	13%
	Black, Black British, Caribbean or African	6	26%
	Other (Roma)	13	57%
	Not stated	1	4%
Number of children	None	11	48%
	1	6	26%
	>1	6	26%
Employed	Yes	5	22%
	No	18	78%

Many participants felt that the information provided during the intervention was valuable and "*helpful to many*" (Participant, FGD). Specifically, having the contact phone number for the maternity unit at the hospital and understanding routes to self-referral, were perceived as particularly valuable aspects of the information which was given. Additionally, several participants commented that the topic itself was important and "*caught my attention… [as being] it's something important*" (Participant 3) when they were initially approached by an Antenatal Care Champion. Having the written information on the postcard was also viewed positively, as it provided a means of referring back to the information about how and when to initiate antenatal care.

> "… all the necessary information like the contact details and just giving a brief run-through was really helpful and useful because there could be someone that is in that situation, and that could have really helped them. And they know they have some form of help ready for them." (Participant 4)

For some women, talking about the pregnancy-related topics which were discussed during the intervention delivery was acknowledged as being taboo, or a subject about which not everyone would feel comfortable speaking in a public area. This was considered to be particularly among the older generation and the Asian community.

> "… in the Asian community, obviously amongst the younger community I think it's quite a public topic to talk about, trying to express your feelings but maybe the older generation stuff, I don't know how open they would be to talk about it in public." (Participant 3)

In addition to these qualitative findings, questionnaire results showed that the appropriateness of the intervention was rated highly among the majority of questionnaire respondents, with 94% (mean 3.94, SD 0.23) of respondents strongly agreeing that the intervention provided them with the information they needed, 92% (mean 3.92, SD 0.28) strongly agreeing that the intervention session was worthwhile, and 97% (mean 3.89, SD 0.52) strongly agreeing that the intervention session increased their knowledge of how to access antenatal care.

Feasibility

The data analysis revealed two sub-themes relating to feasibility: firstly, the value of delivering the intervention in areas of high footfall, and secondly, the relational aspect of receiving the intervention.

Participants commented on the beneficial approach to delivering the intervention in areas of high footfall. The benefits of delivering the intervention in areas of high footfall were commonly perceived to be the diversity of people encountered, as described by one participant who said, "… *you're meeting random people… from different ethnic groups and people of different ages… "* (Participant 5). Participants also felt that it was beneficial that the intervention could be delivered in a fairly short space of time, in an environment where people were often busy.

The relational aspect of group sessions was valued, with comments that they provided a welcoming environment and the opportunity "*for everyone to come and sit and have a chat with each other.*" (Participant, FGD).

Fidelity

As previously described, observations of the delivery of the intervention were conducted. The results of these observations showed that the intervention was implemented as has been planned 100% (n=13) of the time.

Discussion

There is a scarcity of research seeking to develop or evaluate community-based interventions to address the late initiation of antenatal care among ethnically diverse socially disadvantaged neighbourhoods in the UK or other high-income countries. This study contributed towards filling this gap through the development of a community-based intervention co-produced with maternity service users and provider stakeholders, and assessing its acceptability and feasibility.

We co-produced and developed a tailored community-based intervention to increase awareness of the importance of early initiation of antenatal care and how to access antenatal care. The importance of community participation when planning research projects, particularly with underserved or ethnic minority communities, is gaining traction, and there is an increased understanding of the value which it brings to research projects (Fernandez-Turienzo et al., 2021; Stevenson et al., 2022). In this study, the co-production conversations were a critical aspect of designing and developing an intervention tailored to the local community and revealed the focus and priorities which needed to be incorporated into the intervention.

Overall, our assessment of the intervention's acceptability and feasibility showed that those who received the intervention felt that it addressed an important issue, providing valuable information in a way that was acceptable to the community. The gaps in knowledge about how to access antenatal care in pregnancy which were expressed during qualitative interviews and FGDs are congruous with other research findings. Hatherall et al. (2016) found that some women experience delays in initiating antenatal care due to challenges understanding the referral system and difficulties registering, or getting an appointment with a General Practitioner. Participants in our study valued the knowledge that they gained during the intervention, about referral mechanisms, addressing to the mitigation of one of the key contributors for delays in antenatal care initiation.

The characteristics of the person delivering the intervention and their communication skills and knowledge were perceived as important aspects of intervention acceptability. It was also felt that the information received would be adopted (either directly by the intervention recipient or by the recipient passing on the information), as it aided in understanding how to make contact with local maternity services to initiate antenatal care. Despite the relatively low uptake (30%) of the intervention in public spaces of high footfall such as the high street, participants pointed to the advantages of delivering the intervention in this context. Reasons for this low uptake are unclear, but it may have been due to the reluctance to discuss pregnancy-related matters in public spaces, language barriers among non-English speakers, perceptions that the information was not relevant, or simply the lack of time available to speak with an Antenatal Care Champion. Combining the intervention delivery with group intervention sessions may counter the low uptake of the intervention in areas of high footfall. In this study, the number of group sessions was lower than expected because community organisations were still adjusting after Covid-19 lockdowns, but nonetheless it enabled the intervention to be delivered to members of the community who otherwise would not have been reached, due to language barriers, among other factors.

In this intervention, students and newly qualified midwives took on the role of Antenatal Care Champions. In other UK-based public health community engagement projects, lay members of the community have been recruited and trained as peer workers, offering the benefits of already being embedded in, and knowledgeable about the community (Cook and Wills 2012; South et al., 2010). Our findings showed that having the intervention delivered by someone credible and knowledgeable about antenatal care was valued by those receiving the intervention. However, further research could explore and compare the impact of peer workers as Antenatal Care Champions, and whether this approach would enable a greater level of community engagement. Although there are some schemes in which lay members of the community are trained to provide support to women during pregnancy (Gawn-Warby et al., 2020), these do not appear to focus on the timely initiation of antenatal care in early pregnancy.

Whilst tackling late initiation of antenatal care through awareness-

raising and education at a community level can play a valuable role in improving early access to antenatal care, it is important to recognise structural factors, such as restrictive health policies for some immigrant groups, geographical location of antenatal care, or flexibility of appointment times (Haddrill et al., 2014; Hatherall et al., 2016; Lephard and Haith-Cooper, 2016). Similarly, we recognise that the emphasis on the individual is a limitation of the Diffusion of Innovation theory upon which this intervention is based (Haider and Kreps 2004). It is therefore imperative that health system responses to late initiation of antenatal care are also implemented, to address both individual-level and structural, barriers and facilitators to accessing antenatal care.

The overwhelmingly positive acceptability and feasibility of this community intervention suggests it is an approach worthy of further exploration. Further research is needed to evaluate the acceptability and feasibility of our community-based intervention in similar settings nationally along with its effectiveness in enabling women to access antenatal care in a timely manner.

Limitations and strengths

This study is the first of its kind in the UK, to the best of our knowledge, and takes a novel approach to addressing disparities in the timing of antenatal care. Co-producing the intervention with the community enabled us to develop a highly tailored intervention. However, due to resource constraints, we were unable to use interpreters while co-producing the intervention, or during its delivery in areas of high footfall. All the qualitative interviews were conducted in English, although interpreters were used during group sessions and focus group discussions. Engagement with non-English speakers throughout the development and delivery of the intervention may have provided differing perspectives. There is the potential that questionnaire results may be biased as it is likely that the questionnaires were completed by those who were more interested in subject of access to antenatal care and engaged in the intervention. Additionally, there was a low uptake of questionnaire completion among those receiving the intervention. Using a digital questionnaire on a mobile device carried by the Antenatal Care Champion, rather than paper questionnaires may have aided uptake, as it would have been quicker to complete. This in turn may have facilitated the collection of demographic data, which would have provided greater insight into the characteristics of participants. Demographic data was not collected due to the fact that Antenatal Care Champions were engaging with members of the community in public spaces, and collection of demographic data may have caused concern and could have potentially reduced participation in the questionnaire survey. The project began just before the start of the Covid-19 pandemic and as a result of the subsequent measures, we had to make changes to the project design. Firstly the co-production workshops which were planned to be held in-person, had to be moved online with virtual workshops, limiting the engagement of those who are digitally excluded. Secondly, a number of community organisations that we were originally planning to work in partnership with to conduct group intervention sessions, had either closed down or relocated, thus limiting the group sessions we were able to deliver.

Conclusion

While this is a small-scale exploratory study, our findings demonstrate the preliminary acceptability and feasibility of a co-produced community-based intervention towards facilitating timely initiation of antenatal care in ethnically diverse neighbourhood. It was broadly perceived to be delivered in a manner that was acceptable among the community and contained appropriate and useful information. Further research is needed to scale up similar interventions to understand the impact they can have on increasing timely initiation of antenatal care among ethnic minority women.

Credit Author Statement

SP took the lead in conceptualising and designing the study, coordinated and supervised data collection and analysis, interpreted the findings and jointly drafted the manuscript. ES took the lead in collection and interpretation of the data and writing of the manuscript. PcT contributed to the literature review, data analysis and the creation of tables and figures. AH and LL contributed to designing the study and provided input into data interpretation and manuscript preparation. All authors read and approved the final manuscript.

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Declaration of Competing Interest

The authors declare no conflict of interests.

Ethical Approval

This study was approved by the University of Bedfordshire Research Ethics Committee (reference number IHREC946). Participants gave their written consent prior to taking part in interviews or FDGs and data from all participants were guaranteed to be anonymous and confidential.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.midw.2023.103812.

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