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Ethnic disparities in awareness, engagement and acceptance of NHS health checks: a community-led participatory study in Birmingham, UK

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Abstract

Introduction Cardiovascular disease (CVD) remains the leading cause of mortality globally and in the United Kingdom (UK), with disproportionate burdens among Global Majority and migrant populations. Despite the introduction of the National Health Service (NHS) Health Check programme to support early detection and prevention of CVD among adults aged 40–74, uptake remains uneven, particularly among those from the Global Majority heritage. This study aimed to explore how diverse ethnic communities in Birmingham, UK perceive, engage with and access NHS Health Checks.

Methods Using a community-based participatory action research (PAR) approach, we partnered with ten local community organisations to co-design, co-facilitate and interpret focus groups on NHS Health Checks. Twenty-two focus groups were conducted with 180 participants across ten global majority communities (Arab, Bangladeshi, Black Caribbean, Chinese, Ghanaian, Indian, Nigerian, Pakistani, Somali and White British). Data were analysed inductively using NVivo 12, supported by sensitising concepts related to awareness, access, engagement and cultural relevance.

Results Five major themes were identified: (1) Awareness and Understanding, characterised by confusion about the purpose of Health Checks and low awareness in several communities; (2) Cultural and Linguistic Barriers, including English-only communication, gender norms and culturally embedded reactive health behaviours; (3) Uptake Variations by Ethnicity, demonstrating substantial intra-ethnic and gender differences; (4) Trust and Previous Experiences, where both negative and respectful encounters shaped willingness to engage; and (5) Structural Access Barriers, including inconvenient appointment times, complex booking systems and limited community-based provision.

Discussion and conclusion NHS Health Check uptake disparities reflect intersecting cultural, linguistic, experiential and structural influences rather than individual reluctance. Findings highlight the need for culturally tailored communication, gender-sensitive delivery, community-based models and improved ethnicity data granularity.

Keywords NHS Health Check, Cardiovascular disease prevention, Ethnic minority health, Global Majority, Participatory Action Research, Health inequalities

1 Introduction

Despite the enhancement of technology and substantial advances in medical and healthcare sectors yet cardiovascular disease (CVD) is still the leading cause of mortality across the world [7]. According to the World Health Organization (WHO) CVD caused around 20 million or approximately 32% deaths worldwide of which 85% where due to heart attack and stroke [32]. Of the total CVD death in 2022, over 13 million occurred in the low-and middle-income countries. Despite majority of the death happening in low-and middle-income countries previous research reported that CVD kills more people in the developed countries compared to any other disease [7]. Furthermore, CVD continues to be one of the biggest causes of death in the United Kingdom (UK). For instance, 7.6 million people in the UK are living with CVD with over 4 million males and 4.6 million females. According to the British Heart Foundation (BHF) CVD is responsible for around 26% of all deaths in the UK; that's more than 170,000 deaths a year, or 480 each day and/or one every three minutes [3]. Recent research by [29] found that the total direct and indirect costs of CVD inpatient services is estimated to be over £29 billion in the UK. Research have shown that most CVD can be prevented if appropriate sociodemographic, behavioural, lifestyle and environmental risk factors such as tobacco use, unhealthy diet, overweight/obesity, physical inactivity, harmful use of alcohol and air pollution are taken care [1, 30, 33]. Early detection of CVD can prevent or help provide a better management with public health, counselling or medicines interventions. [23] explored the sociodemographic, lifestyle, environmental and traditional clinical risk factor alterations between 502,539 participants from UK Biobank of diverse ethnicities such as White European, South Asian and Black African or Caribbean. Results showed, people from South Asian heritage have high risk of cardiovascular morbidity and mortality compared to White European and Black African or Caribbean. Although previous research reporting helpful findings but considering South Asian as a homogeneous group is a limitation, to understand the nuances and the possibility of reporting results heterogeneously for ethnicities, gender, and potentially age groups could yield different results [27].

In this paper, we use the term *global majority* to refer to racially minoritised populations who collectively constitute most of the world's population, moving away from deficit-framed labels such as "ethnic minority" or "BAME". The Cambridge University Press [4] defines the global majority as "the group of people in the world who do not consider themselves or are not considered to be white", emphasising that, numerically, these populations form the majority of humanity. Complementary activist and scholarly work further frames the global majority as an inclusive, strengths-based term for roughly 80% of humanity racialised as non-white, developed to replace homogenising and pathologising "minority" language and to re-centre histories and leadership of racialised communities [5]. Birmingham is one of the UK's largest and most ethnically diverse cities providing an important setting to understand why these differences exist. More than half of the population identify as part of global majority ethnic groups, and many local wards fall within the mostly deprived areas. These overlapping factors of ethnicity, deprivation, gender and immigration status shape people's health in powerful ways. For instance, previous research suggested that people from South Asian heritage in the UK are five times more likely to develop diabetes and have a two-fold higher risk of heart diseases compared to the general population [20, 27]. Furthermore, evidence shows, African and Caribbean communities face higher risks of hypertension, diabetes and CVD, many individuals from these groups are still not accessing the NHS Health Checks as often as they could/should. However, this is further complicated by the way ethnicity data is recorded. For instance, broad categories such as "South Asian" or "Black" often merge distinct cultural groups together as homogenous group, making it difficult to identify specific barriers and potential facilitators as well as health related interventions that could reflect the needs and experiences of diverse communities. Therefore, it is recommended to comprehensively understand the degrees of issues as it's essential to explore barriers and facilitators across ethnicities heterogeneously rather than homogenously [13, 27].

To help prevent CVD, the NHS introduced the Health Check programme in 2009, offering adults aged 40–74 a routine assessment of their heart and metabolic health [21]. Although the programme is designed for everyone, research shows that not all communities are engaging or aware equally. Uptake is particularly lower among racially marginalised groups [8, 11]. For instance, immigrant and ethnic minority populations often experience a unique relationship of cultural norms, socioeconomic disadvantage and environmental constraints that shape their risk of CVD and engagement with preventive health services. Migration can disrupt established lifestyle patterns, while acculturation may influence health behaviours in complexities [28]. For example, migrants who become more integrated into the host society often report higher levels of healthy and active behaviour and improved health literacy; however, these benefits are frequently compromised when individuals encounter language barriers, low income, unfamiliar healthcare systems or environments that do not support active or healthy living. Majority of the Birmingham population especially from the global majority ethnic groups are residing in the mostly deprived areas further negatively impacting their health and wellbeing. Research also shows, cultural and religious norms may limit opportunities for health-enhancing behaviours [28]. For instance, Muslim women prefer gender-specific or culturally familiar settings due to concerns about modesty or dress, which can influence overall participation levels in any given health or wellbeing related programme. These cultural, structural and environmental barriers not only increase vulnerability to CVD but also contribute to lower engagement with preventive services such as NHS Health Checks. When compounded by broader general inequalities such as socioeconomic deprivation, limited access to culturally appropriate services and inadequate ethnicity data imbalance these factors help explain why certain migrant and Global Majority ethnic groups remain underserved despite having a disproportionately higher burden of CVD risk. Understanding this intersecting influence is therefore essential for designing culturally responsive interventions and improving equitable access to preventive healthcare across diverse communities. Therefore, the aim of this study was to explore how different Global Majority ethnic communities in Birmingham perceive, engage, and access the NHS Health Checks, and to identify culturally informed approaches that could help improve awareness and participation among those who are currently underserved.

2 Methods–PAR, reflexivity and recruitment

2.1 Participatory approach and community partnerships

This study formed part of a wider community-led participatory action research (PAR) project on NHS Health Checks in Birmingham. Previous research has suggested that co-production and co-designing are a way of working collaboratively for shared aims and it apprehensions where everyone relates to an issue of existing skills, experience and knowledge that are valued and utilised which can help evaluate health and wellbeing related programmes, policy making or service development [2, 12]. Thus, the study was informed by participatory action research principles. Community partners contributed at multiple stages: they co-developed the focus group topic guides and recruitment strategies; hosted and, where appropriate, co-facilitated the sessions in community-preferred languages; and participated in a feedback workshop where preliminary themes were presented and refined. This iterative process constituted a cycle of action and reflection, ensuring that the analysis remained grounded in community perspectives and that emerging findings fed directly into practical recommendations for Birmingham City Council and participating organisations. The PAR approach also involves cycles of planning, action and reflection, with learning from each cycle contributing towards further planning and action [19]. The PAR approach helps empower participants to play the role of 'change agents' such as helping participants developing a sense of belonging for the betterment of collective good ([6, 9]. This process helps developed from efforts to strengths as a collective subject that learns how to act more effectively for its aims and collective good. For instance, previous research across subjects demonstrated the use of PAR and co-production to address matters of social injustice and exclusion [14, 24] and in co-producing guidance with health professionals [31].

2.2 Research team and reflexivity

The academic research team comprised public health and social science researchers with experience in qualitative and mixed-methods, health inequalities and community-based research. Team members and volunteers included individuals from both global majority and White British backgrounds, with varying levels of pre-existing connection to the participating communities. We recognised that our positionalities, professional roles and institutional affiliations could shape how questions were asked, how participants responded, and how data were interpreted. To address this, we incorporated reflexive practice throughout the study. Community facilitators and academic researchers held brief debrief discussions after each focus group to reflect on group dynamics, what might have been left unsaid, and how our own assumptions might have influenced the conversation. During analysis workshops, we explicitly discussed how our social positions and experiences informed theme development, and we invited community partners to challenge our interpretations. This reflexive, dialogic process was central to maintaining the participatory ethos of the project and to mitigating, rather than ignoring, existing power differentials.

2.3 Sampling and recruitment

We used purposive and convenience sampling to recruit adults from Global Majority communities residing in Birmingham neighbourhoods identified as having lower NHS Health Check uptake. Community organisations led recruitment using methods

Table 1 Participants per ethnicity and gender that participated in focus groups

Ethnicity	Total (*n*)	Male *n* (%)	Female *n* (%)
Chinese	16	7 (43.8%)	9 (56.3%)
Nigerian	20	7 (35.0%)	13 (65.0%)
Bangladeshi	21	9 (42.9%)	12 (57.1%)
Pakistani	24	12 (50.0%)	12 (50.0%)
Somali	20	10 (50.0%)	10 (50.0%)
Black Caribbean	18	9 (50.0%)	9 (50.0%)
Arab	17	7 (41.2%)	10 (58.8%)
White British	10	6 (60.0%)	4 (40.0%)
Ghanaian	14	8 (57.1%)	6 (42.9%)
Indian	20	8 (40.0%)	12 (60.0%)

that reflected their usual communication practices, including announcements at religious services and community events, posters in community centres, and circulation of invitation flyers via WhatsApp and existing mailing lists. Facilitators were asked to invite adults aged 35–75 years from the communities they routinely serve, regardless of prior awareness of NHS Health Checks, to capture both users and non-users of the programme. A two-stage sampling approach was used, first focusing on ethnicity then age followed by gender to ensure broad representation. In total, ($n = 193$) people participated in ($n = 22$) focus group discussions, representing ($n = 10$) different ethnic communities. The ethnic communities included Arab, Bangladeshi, Black Caribbean, Chinese, Ghanaian, Indian, Nigerian, Pakistani, Somali and White British. Of the total ($n = 193$) participants ($n = 180$) were from the communities and ($n = 13$) were professionals from NHS. However, for the purpose of this study the ($n = 180$) participants across different ethnic communities are included. The ten community organisations comprised a mix of faith-based institutions (e.g. mosques and churches), women's community groups, African and Caribbean cultural centres, South Asian community associations and a refugee/migrant support charity, all located in socioeconomically deprived neighbourhoods of Birmingham. Collectively, they served predominantly Pakistani, Bangladeshi, Black African, Black Caribbean, Chinese and Arab communities. These organisations were selected because of their established reputations as trusted, long-standing hubs for Global Majority communities with limited engagement in mainstream preventive services. Table 1 provide breakdown of participants per ethnicity, and gender that participated in the focus groups.

2.4 Data collection

Following the ethical approval from Birmingham City University Ethics Committee (Hossain/#13344/sub2/R(A)/2024/Sep/HELS FAEC), ten local community organisations around Birmingham acted as providers and worked alongside the researchers to co-produce, co-design and run the sessions for data collections, using topic guides that were culturally adapted to each community's needs. Community facilitators were members or long-standing volunteers from the participating organisations, with established relationships in their communities. They received a short training session from the academic team covering the study aims, use of the topic guide, informed consent, confidentiality, and managing group dynamics. Facilitators co-moderated focus groups alongside a member of the academic team, with the latter taking responsibility for consent and ethical oversight. Topic guides were developed collaboratively by the academic team and community partners, informed by existing literature on NHS Health Checks and local stakeholder discussions. Guides covered awareness and understanding of NHS Health Checks, broader experiences of primary care and preventive services, perceived risk and salience of cardiovascular disease and related conditions, barriers and facilitators to attending checks, and suggestions for more acceptable delivery. Questions were piloted with two community groups and minor wording adjustments were made for clarity and cultural relevance. Participants completed a brief socio-demographic form capturing age group, gender, broad ethnic background and whether they had ever been invited to or attended an NHS Health Check. We did not collect detailed health status or insurance information, as the focus groups prioritised community narratives about access and acceptability; we acknowledge this as a limitation.

2.5 Data analysis

Data analysis was led by MH (with expertise in qualitative methods) with analytic support from FJ and AS (with expertise in mixed methods). MH undertook initial coding of all transcripts, and a subset were independently coded by FJ and AS to enhance reflexivity and rigour; discrepancies were discussed and resolved by consensus. Provisional thematic charts were then presented to community partners in a feedback workshop, and their reflections were incorporated into the final interpretive framework. Data were analysed using thematic analysis (TA). TA is generally employed in qualitative data analysis as it distinguishing, analysing, and reporting themes within dataset [10, 25]. TA was the most suitable approach due its flexibility and capacity that specify detailed insights into the lived experiences, particularly focusing on hard-to-reach populations and underrepresented Global Majority ethnic groups [16, 17, 26].

2.6 Coding and theme development

Following familiarisation with the dataset, the research team engaged in repeated readings of all focus group transcripts to ensure immersion in the data and to capture the cultural and contextual nuances expressed across diverse ethnic groups. Initial coding was conducted in NVivo 12, using an inductive approach that allowed codes and patterns to emerge organically from participants' narratives rather than being constrained by predefined assumptions. At the same time, the analysis was guided by sensitising concepts related to awareness, access, engagement and cultural appropriateness, enabling both inductive and deductive insights to be integrated coherently.

As coding progressed, similar codes were clustered to form preliminary themes. These themes were iteratively refined through regular peer debriefing sessions within the research team, during which analytical decisions, coding discrepancies and emerging interpretations were critically examined. This iterative process ensured that themes accurately represented shared experiences while also capturing community-specific differences. Thematic refinement continued until the research team agreed that the thematic structure offered a comprehensive and coherent representation of the dataset.

To enhance the credibility and cultural validity of the analysis, community facilitators who had co-designed and delivered the focus groups were actively involved in reviewing and validating emerging themes. Their linguistic, cultural and contextual knowledge was essential in confirming interpretations, identifying nuances that might otherwise have been overlooked, and ensuring that the analysis authentically reflected the lived realities of each ethnic group. This co-produced validation process formed an essential part of the analytic rigour, aligning with good practice guidelines in qualitative research involving marginalised communities.

Analytical trustworthiness was further strengthened through researcher triangulation. For instance, the research team independently reviewed coded extracts and thematic structures before reaching consensus on final interpretations. Regular team discussions helped ensure internal consistency, minimise potential bias, and maintain reliability to participants' accounts. Although saturation in focus group studies is more conceptual than numerical, the convergence of themes across 22 community focus groups and discussions with 13 NHS Health Check providers indicated a high level of thematic completeness, demonstrating that the analysis sufficiently captured the breadth and depth of participants' perspectives.

3 Results

A total of 10 different global majority ethnic groups ($n = 180$) contributed to this study. Five overarching themes emerged from the thematic analysis: (1) Awareness and Understanding, (2) Cultural and Linguistic Barriers, (3) Uptake Variations by Ethnicity, (4) Trust and Previous Experiences, and (5) Structural Access Barriers. These themes reflect the multi-layered influences shaping awareness, perceptions and engagement with NHS Health Checks across Birmingham's diverse communities.

3.1 Awareness and understanding

Awareness of the NHS Health Check programme varied considerably between ethnic groups, with particularly low levels among Somali, Bangladeshi, Chinese and Nigerian participants. Many individuals reported that they had never heard of the programme or were unaware of its purpose. Participants frequently confused the Health Check with routine GP appointments, indicating broader gaps in understanding of preventive healthcare within these groups.

One Somali participant noted, *"Some people don't know what the health check is… they think it is just the normal appointment at the GP."* (Somali man, 49 years old). Similarly, a Bangladeshi woman explained, *"I thought the letter was for another appointment, not something different… I didn't know it was important."* (Bangladeshi woman, 54 years old). The belief that preventive care is unnecessary without symptoms was widespread, particularly among Somali and Bangladeshi groups. As one participant stated, *"If you are not sick, why go to doctor? We only go when we feel something is wrong."* (Pakistani man, 66 years old).

Younger adults and men, across several communities, demonstrated a lower sense of need. A younger male participant said, *"I don't think I need it. I feel fine, I don't have any problems."* (Black Caribbean man, 57 years old). These insights reflect how limited awareness, misconceptions and reactive health beliefs shape engagement with preventive services. Taken together, these accounts suggest that low awareness is not simply an individual knowledge deficit but is linked to how the programme is communicated and branded in multilingual, high-deprivation settings. Where information is opaque or overly generic, invitations fail to signal urgency or relevance, particularly for those juggling multiple social and economic pressures.

3.2 Cultural and linguistic barriers

Language barriers were a dominant challenge affecting multiple communities. English-only invitation letters were frequently described as inaccessible, leading to passive disengagement. A Bangladeshi woman stated, *"I couldn't understand the letter, so I ignored it."* Participants emphasised the need for culturally sensitive and linguistically appropriate materials to ensure equitable access.

Cultural norms further shaped how different groups interacted with preventive services. Many participants expressed that in their countries of origin, individuals typically seek medical care only when unwell. As one South Asian woman said, *"For us, we only go to doctor when something is wrong… not just for checking"(Indian women, 53 years old).*

Gender dynamics also influenced engagement. Women from South Asian and Somali communities highlighted discomfort with male practitioners, limiting their willingness to attend. A Somali woman 62 *years old* shared, *"If the doctor is a man, I don't feel comfortable… I will not go."* These cultural and linguistic barriers underscore the importance of culturally responsive service design.

3.3 Uptake variations by ethnicity

Engagement with the NHS Health Check varied widely across ethnic groups, demonstrating that uptake is far from uniform. Chinese and Nigerian participants reported the highest levels of attendance. One Chinese female 58 years old participant explained, *"In our community we go every year, we like to know the numbers."* A Nigerian female 63 years old participant similarly stated, *"It is good to check early. Many in our community go for it."*

Conversely, Arab and White British males reported minimal or no engagement. One Arab male 61 years old participant noted, *"I have never done it… I don't see the need,"* while a White British male 55 years old commented, *"Never heard of it. No one told me."*

Gender differences were evident across most communities, with women more likely to attend than men. As a Somali female 53 years old participant observed, *"Women go more because we worry more. Men think they are strong."* These variations highlight the interplay between ethnicity, gender norms and cultural attitudes in shaping preventive health behaviours.

3.4 Trust and previous experiences

Participants' trust in healthcare services emerged as a central influence on their willingness to engage with NHS Health Checks. Negative past encounters such as lost results, limited explanation or rushed consultations created uncertainty and discouraged future attendance. A Black Caribbean 49 years old male participant shared, *"Last time they lost my results… so what is the point of going again?"* Similarly, a Pakistani male 51 years old participants reflected, *"The GP doesn't listen. They rush you."*

Conversely, positive interactions with healthcare providers significantly increased willingness to attend. A Nigerian male 70 years old participant described, *"When the nurse explained everything clearly, I felt comfortable. That is why I went again."* Respectful communication and personalised care were repeatedly emphasised as critical components for building trust and encouraging engagement.

3.5 Structural access barriers

Structural and logistical barriers presented considerable challenges to accessing NHS Health Checks. Appointment availability during standard working hours was a key issue for many working-age adults. As a Ghanaian 57-year-old male participant stated, *"I work full time. How can I go if they only give daytime appointments?"*

Booking processes were commonly described as barrier and time-consuming. A Pakistani female 49 years old participant noted, *"The booking system is too confusing... too many steps."* Additionally, participants expressed a clear preference for Health Checks to be offered in community-based settings. A Somali female 62 years old participant stated, *"If it was at the community centre, many people would come."*

4 Discussion

This study demonstrates that ethnic disparities in the uptake of NHS Health Checks are shaped by a combination of structural, cultural and experiential factors. Participants described a range of barriers, including limited awareness and understanding of preventive healthcare, linguistic and communication challenges, and varying levels of trust in healthcare providers. In addition, logistical difficulties related to appointment scheduling, booking processes and the lack of community-based delivery options further contributed to reduced engagement among several communities. Present findings emphasize the essential of acceptance not as an individual level but as one embedded within broader social, cultural and systemic contexts.

This study provides a nuanced examination of the structural, cultural and experiential factors contributing to ethnic disparities in acceptance of the NHS Health Checks. The findings highlight that these disparities do not occur from individual choice or unwillingness, but are embedded within broader socio-cultural systems, historical patterns of trust, migration-related experiences and structural configurations of healthcare delivery. Across all participating ethnic groups, barriers emerged at multiple levels shaping awareness, interpretations of preventive care, and ultimately influencing engagement with NHS Health Checks. The first key theme awareness and understanding revealed confusion about the purpose of the programme, with many participants mistaking Health Checks for routine GP visits or perceiving them as relevant only when symptoms were present. This reflects longstanding evidence that preventive health behaviour is strongly shaped by cultural beliefs, health literacy and expectations of care [20, 23]. In several communities, especially among Somali and Bangladeshi participants, illness-driven decision-making dominated. Such findings suggest that a reactive orientation to healthcare may be reinforced by past experiences in both country of origin and UK settings, contributing to persistent under-engagement with prevention-focused services. Our approach was informed by good-practice guidance for qualitative and participatory research with marginalised communities, emphasising shared decision-making, transparency, reciprocity and accessible dissemination [6, 17]. Recognising historical injustices and mistrust in research, we sought to ensure that community organisations were not only recruitment sites but active partners in shaping the study and in interpreting and sharing findings.

The second theme cultural and linguistic barriers demonstrate how communication practices within the NHS continue to disadvantage communities with limited English proficiency or culturally specific gender norms. English-only correspondence was routinely ignored or misunderstood, echoing similar findings from national evaluations [11]. Gender concordance was especially relevant for South Asian and Somali women, highlighting the ongoing necessity of gender-sensitive service configuration in multicultural health systems. These findings underscore the need for embedding cultural competence not as an optional enhancement, but as a core component of equitable service provision.

The third theme variation in uptake by ethnicity challenged assumptions of uniformity within broad ethnic categories. Chinese and Nigerian participants showed relatively high levels of engagement, whereas Arab and White British men reported the lowest uptake. These intra-ethnic differences reinforce the limitations of overly broad ethnic categories such as "South Asian" or "Black," which mask specific cultural, linguistic and migration histories that influence health behaviour. As previous studies argue [15, 21], meaningful intervention design requires granularity, not homogenisation, of ethnicity data.

The fourth theme trust and previous experiences highlight the critical role of relational factors in shaping engagement with preventive services. Participants reported that rushed consultations, lost results or poor communication discouraged them from attending Health Checks. On the contrary, respectful and personalised encounters enhanced trust and encouraged repeat engagement. This aligns with broader research showing that trust is a central determinant of the effectiveness of public health programmes, particularly among racially marginalised groups with historical reasons to distrust institutions [27]. The consistency of these findings across communities suggests that improving relational quality within NHS encounters may be as important as addressing structural barriers.

Finally, the theme of structural access barriers highlights the systemic constraints that disproportionately impact working-age and migrant populations. Inflexible appointment times, complex booking systems and limited availability of community-based venues created tangible obstacles to attendance. Furthermore, participants clearly favoured delivery through familiar and trusted community settings. These finding aligns with previous research demonstrating that community-embedded models of preventive care could increase uptake and reduce inequities [17].

The findings underscore the importance of adopting co-produced approaches in the design and delivery of preventive health programmes, offering a robust framework for improving equity, engagement and long-term impact across diverse populations. By involving community members, local organisations and practitioners as equal partners, co-production ensures that interventions are culturally resonant, linguistically accessible and grounded in lived experience. From a policy perspective, this approach highlights the need for commissioning structures that prioritise detailed ethnicity data collection, mandate culturally adapted communication materials and support community-based delivery models. At the practice level, co-production encourages health professionals to build sustained relationships with communities, integrate gender-sensitive service options, and tailor engagement strategies to groups with historically lower uptake, including men and younger adults. Collectively, these insights demonstrate that embedding co-production within public health systems can lead to more responsive, acceptable and sustainable interventions that meaningfully address the structural and cultural barriers contributing to health inequalities.

The current findings are consistent with existing literature advocating for culturally adapted and community-embedded approaches to increase uptake of preventive services [7, 22]. The present study also reinforces evidence suggesting that men and younger adults are less likely to engage with preventive health checks and therefore require additional targeted strategies. Collectively, these insights contribute to a more nuanced understanding of the multi-layered factors influencing NHS Health Check uptake and underscore the need for responsive, equitable and community-centred public health interventions. In summary, the emerged themes demonstrate how disparities in Health Check acceptance arise from intersecting influences health literacy, cultural beliefs, migration histories, gender norms, language barriers, structural constraints and the relational quality of NHS encounters. Critically, the findings show, individual-level explanations are insufficient; instead, inequalities in engagement reflect deeper systemic patterns that require coordinated structural and cultural adaptation of service delivery. This study contributes to existing evidence by offering a detailed, community-informed understanding of why preventive health programmes fail to reach those at risk, despite being available. The consistency of findings across ethnically diverse groups underscores the importance of reframing NHS Health Checks not merely as a screening tool, but as a culturally mediated interaction that must be embedded in trusted spaces, delivered through flexible pathways, and supported by communication strategies that resonate with the lived realities of diverse populations.

5 Limitations

This study has several limitations. First, it was conducted in a single super-diverse city and focused on global majority communities already connected to ten community organisations. The findings may therefore not be directly generalisable to global majority populations in other regions, rural settings or individuals who are less engaged with community structures. Second, several focus groups were conducted partly or wholly in languages other than English, with subsequent translation and interpretation into English for analysis. Although we worked closely with bilingual community facilitators and cross-checked meaning during analysis, it is possible that some nuance was lost or re-framed through these processes. Third, by recruiting through community organisations, we may have over-represented individuals who are already relatively engaged or connected, potentially underestimating barriers experienced by more socially isolated residents. Finally, as with all focus group research, social desirability dynamics and the presence of peers may have influenced what participants chose to share, and some quieter voices may have been less fully heard. Our use of community-led facilitation and small group sizes sought to mitigate these effects, but they cannot be eliminated. These limitations underline that our aim was not statistical generalisation, but to generate contextually rich insights to inform more equity-oriented approaches to NHS Health Checks in similarly diverse urban settings.

6 Conclusion

This study demonstrates that disparities in NHS Health Check uptake are not a consequence of eligibility criteria but arise from a complex interplay of cultural, communicative and structural barriers. These include limited awareness of preventive health, linguistic challenges, gender-related concerns, mistrust linked to previous healthcare experiences and practical difficulties in accessing appointments. The findings highlight that current approaches which broadly categorise individuals under umbrella terms such as "global majority" or "minority ethnic groups" are insufficient. Such classifications overlook important cultural, linguistic and experiential differences within and between communities, ultimately weakening the effectiveness of interventions intended to promote equitable participation.

To address these gaps, a more nuanced and culturally responsive model of service delivery is required. Based on the evidence presented, several key recommendations emerge. First, invitation materials should be available in multiple languages and adapted to reflect cultural norms and health beliefs. Second, delivering NHS Health Checks within community settings such as faith institutions, cultural centres and local organisations may significantly improve accessibility and trust. Third, gender-sensitive approaches, including the option of same-gender practitioners, are essential for communities where gender norms influence healthcare engagement. Fourth, targeted strategies are needed to increase uptake among men, who consistently demonstrated lower participation across several ethnic groups.

In addition, commissioners should mandate the collection of more detailed ethnicity data to enable precise monitoring and the development of tailored interventions. Finally, ongoing cultural competency training for NHS staff is vital to ensure respectful, informed and inclusive service delivery. Collectively, these recommendations aim to support more equitable engagement with NHS Health Checks and strengthen the programme's potential to reduce inequalities in cardiovascular and metabolic health.

Appendix 1

See Table 2 here.

Table 2 Themes and key findings

Theme	**Key Findings**	**Additional Notes / Illustrative Quotes**
Awareness and understanding	Low awareness in Somali, Bangladeshi, Chinese and Nigerian communities. Confusion between NHS Health Checks and routine GP visits. Preventive health viewed as unnecessary unless symptoms are present (especially Somali and Bangladeshi groups). Younger adults (< 50) and males showed lower perceived need.	Preventive healthcare often misunderstood and under-prioritised.
Cultural and Linguistic Barriers	English-only invitation letters excluded non-English speakers. Cultural norms favour reactive rather than preventive care. South Asian and Somali women uncomfortable with male practitioners.	"I couldn't understand the letter, so I ignored it" Bangladeshi woman
Uptake Variations by Ethnicity	Highest uptake: Chinese and Nigerian communities. Lowest uptake: Arab and White British males reported no participation. Women generally more likely to attend than men.	Patterns suggest gender and culture shape engagement differently across groups.
Trust and Previous Experiences	Past negative experiences (e.g., lost results, rushed consultations) reduced trust. Respectful, personalised communication increased willingness to attend.	Trust strongly influenced by the quality of past NHS interactions.
Structural Access Barriers	Appointment times during working hours limited attendance. Complicated booking processes discouraged participation. Shortage of community-based delivery venues.	Structural constraints affected working-age adults disproportionately.

Institutional review board statement

Ethics approval and consent to participate: This study was conducted according to the guidelines of the Declaration of Helsinki and approved by Birmingham City University Ethics Committee (Hossain/#13344/sub2/R(A)/2024/Sep/HELS FAEC).

Author contributions

Conceptualization, A.S., M.H.; data curation, A.S. M.H.; formal analysis, M.H., A.S, investigation, M.H., A.S.; methodology, M.H., and A.S., project administration, M.H., A.S.; supervision, M.H., A.S.; writing—original draft, A.S., M.H.; writing review and editing, M.H; F.J., All authors have read and agreed to the published version of the manuscript.

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Data availability

The datasets generated and/or analysed during the current study are not publicly available but can be obtained from the corresponding author Dr Muhammad Hossain: muhammad.hossain@bcu.ac.uk —upon reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was obtained from the Birmingham City University Faculty Ethics Committee (Ref: Hossain /#13344 /sub2 /R(A) /2024 /Sep /HELS FAEC)). Written informed consent was obtained from all participants prior to participation in the study.

Consent for publication

Participants were informed that anonymised quotations might be used in publications arising from this study, and consented to publication of anonymised data.

Informed Consent

Informed consent was obtained from all participants included in the study.

Competing interests

The authors declare no competing interests.

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