

Birmingham Culturally Intelligent Approach to Chronic Headaches and Migraines in Pakistani Communities (BCIAHP): Process and Impact Evaluation

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Executive Summary

Background

[The Birmingham Culturally Intelligent Approach to Headache and Migraine in Pakistani Communities \(BCIAHP\)](#) is a public health project led by Birmingham City Council's (BCC) Public Health Division. Financial support was provided as a quality improvement grant from Pfizer Limited. The project sought to uncover and address the cultural, social, and systemic barriers that prevent individuals in Birmingham's large Pakistani communities from accessing timely diagnosis and treatment for chronic headaches and migraines. The project involved collaborations with local community partners: The Delicate Mind (TDM) and Birmingham Voluntary Service Council (BVSC). The project evaluation was conducted by Social Machines Limited.

Note that during this project, BCC Public Health Division has shifted its terminologies from 'cultural competence' to 'cultural humility' and from 'culturally intelligent (materials)' to 'culturally informed (materials)'. Thus, although the project title and associated documents use the former terms, in this report, 'cultural humility' and 'culturally informed' will be used to align with the current preferred terms.

Across its four phases, BCIAHP aimed to:

- Phase 1: Understand local needs and barriers through mixed-methods research.
- Phase 2: Co-design culturally informed educational materials with community members and healthcare professionals (HCPs).
- Phase 3: Disseminate these resources through community influencers (CIs) and HCPs.
- Phase 4: Evaluate both the process and the impact of these interventions using the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance).

The overall aim was to promote culturally informed, inclusive approaches to healthcare that bridge gaps in awareness, improve cultural humility among HCPs, and empower communities to better manage headaches and migraines.

Key Findings

Across the four phases, BCIAHP revealed important insights about community needs and the effectiveness of culturally tailored interventions.

- **Community insights and barriers:** Pakistani community members experience multiple barriers to accessing appropriate headache and migraine care, including stigma, limited health literacy, language barriers, and distrust of mainstream healthcare. Pain and migraine symptoms are often normalised, and cultural norms around stoicism and self-management can delay medical consultation.



- **Data and evidence:** Quantitative data indicated that while migraine prevalence among Birmingham's Pakistani population aligns with the city average, hospitalisation rates are disproportionately higher, suggesting late presentation or inadequate access to early interventions such as early diagnosis and effective management in the community.
- **Culturally informed co-design:** Co-production workshops led by TDM and supported by BCC led to the development of informational resources (booklets, posters, and videos) in English and Urdu. These materials reflected lived experience and sought to make medical advice more culturally relevant. However, quality assurance gaps led to mixed perceptions among community recipients.
- **Community and HCP engagement:** CIs distributed over 600 guides and 100 posters across more than 100 locations. A survey, although minimal in the number of respondents, indicated increased knowledge, confidence, and intention to seek medical advice among community members. HCPs who agreed to use and share the resources also reported higher levels of cultural awareness and found the resources helpful in supporting more culturally sensitive consultations.
- **Evaluation process:** The evaluation process itself highlighted structural lessons, particularly the need to embed evaluators and community stakeholders earlier in project design to ensure stronger data coordination, representativeness, and feedback loops.

Recommendations

Based on the evaluation, recommendations for future projects were developed. Many of these recommendations illustrate what worked well in BCIAHP, but the evaluation also highlighted areas that, in hindsight, would have benefitted from greater consideration.

For Commissioning Organisations and Commissioners

1. Embed participatory and co-design approaches from project inception, engaging directly with citizens and community partners in defining priorities, designing tools, and shaping interventions.
2. Strengthen translation, review of cultural relevance and appropriateness, and accessibility with multiple reviewers and community gatekeepers/leaders.
3. Integrate evaluation as a co-creative process from the outset, ensuring that learning informs delivery in real time.

For System and Community Partners

The ability of system and community partners to adopt recommendations may depend on the actions of commissioners, and therefore recommendations should be considered by both parties.

4. Build equitable partnerships with clear expectations, quality standards, and support for capacity-building among community organisations.



5. Expand outreach and inclusion strategies to engage underrepresented groups within the community.
6. Sustain community capacity by providing continued opportunities for community researchers and influencers beyond individual project cycles.

For Healthcare Providers and Clinicians

7. Develop and sustain cultural humility training and culturally informed resources through multifaceted interventions and structural changes.
8. Integrate culturally informed materials into existing systems and workflows.
9. Foster open dialogue about traditional and faith-based practices to support medically safe and holistic care that is aligned with patients' values.

Introduction

Overview

[The Birmingham Culturally Intelligent Approach to Headache Disorder in Pakistani Communities \(BCIAHP\)](#) is a project led by Birmingham City Council's (BCC) Public Health Division. Financial support was provided as a quality improvement grant from Pfizer Limited. The project seeks to uncover the cultural, social, and systemic barriers that prevent individuals from accessing timely diagnosis and treatment for headaches and migraines. It aims to leverage these insights and co-design approaches to create informative, culturally informed resources that target attitudes, knowledge, and behaviours around headaches and migraines among the Pakistani community and the broader healthcare practitioners in Birmingham. The approach aimed to empower local community members and increase awareness and understanding of the factors contributing to headaches and migraines in the community, how to prevent them, and when to seek clinical advice.

Note that during the project, BCC Public Health has shifted to use the terms 'cultural humility' (instead of cultural competence) and 'culturally informed' (instead of culturally intelligent). Thus, with the exception of the project title, this report will use the current preferred terms.

Population and Local Context

Headache disorders - particularly migraines - are a significant global health concern:

- Migraines affect 1 in 7 people worldwide, with up to one-third experiencing aura symptoms (NICE, 2022).
- The World Health Organization (WHO) ranks migraines among the top 20 causes of healthy years of life lost (WHO, 2019).
- Migraine is the second leading cause of disability globally, and the leading cause among women aged 25-49 (Steiner, 2020).
- The long-term impact of migraines includes reduced quality of life, strained relationships, financial burden, and increased risk of anxiety and depression (WHO, 2011; 2016).

A recent study revealed that in Pakistan, 40% of respondents suffered from migraines, with the majority being:

- Female (78.1%)
- Aged 20-29 (69.2%)
- Students (76.1%)

Common triggers included sleep disturbance (70.5%), stress (66.7%), and fatigue (64.4%). Among women, menstruation was also a notable factor (31.8%). Coping mechanisms

ranged from rest and medication to massage and retreating to quiet, dark spaces (Athar et al., 2022).

Birmingham is home to the largest Pakistani community of any local authority in England, with 195,853 residents—representing 17% of the city’s population (Birmingham City Council, 2022). Despite this, there is limited data on the prevalence and impact of headache disorders within this community. Cultural factors, stigma, and systemic barriers may contribute to underreporting and delayed treatment.

This project aims to bridge that gap by:

- Promoting culturally sensitive awareness and education
- Encouraging appropriate presentation and communication of symptoms
- Supporting timely diagnosis and effective treatment

To align with the Pakistani migraine study and ensure meaningful comparisons, BCIAHP initially focused on three groups within Birmingham’s Pakistani communities:

- Smokers
- Individuals with high blood pressure
- Working-aged women

The original project proposal focused on the East locality of Birmingham, including the constituencies of Hodge Hill and Yardley, where approximately 50% of Birmingham’s Pakistani communities reside. However, when collecting and analysing data for Phase 1 of the project, it was decided that all Pakistani communities in the city would be included, for a few reasons:

- It was difficult to separate clinical data by locality in practice and was difficult to isolate the data from East Birmingham during the community research.
- Focusing on the East locality would restrict the scoping activity and reduce the generalisability of the findings.
- A focus on East Birmingham would exclude about half of the Pakistani communities in Birmingham.

Project Phases

BCIAHP is ordered by four key phases:

- **Phase 1** aimed to provide an evidence-based foundation for the upcoming intervention and communications designs, by assessing the local needs through multi-source mixed data collection.
- **Phase 2** involved collaborating with the community and healthcare professionals through focus groups and co-design workshops to develop culturally appropriate resources.

- **Phase 3** involved disseminating resources through community ambassadors, engaging with the community and HCPs through the evidence and co-creation produced by the former stages.
- **Phase 4** involved conducting process and impact evaluations of the entire project.

BCC Public Health commissioned and collaborated with local organisations - The Delicate Mind (TDM) and Birmingham Voluntary Services Council (BVSC) - to achieve the above activities.

Academic Evaluation

Aims of the Evaluation

BCC Public Health commissioned Social Machines to conduct an evaluation of the BCIAHP project. The evaluation is a mixed methods approach, covering both process evaluations of Phases 1 to 3, and an impact evaluation in Phase 4.

In the process evaluation, the aims were to ensure that the processes were robust and implementation-ready for future iterations. This included noting the strengths, limitations, and lessons learned. The impact evaluation focused on the extent to which the intervention achieved its desired outcomes.

Theory of Change and RE-AIM Framework

At the start of the evaluation planning, Social Machines developed a Theory of Change, found in Appendix 1, to map out how the BCIAHP project is expected to deliver its outcomes. The process and outputs of each stage are then mapped onto the RE-AIM framework (Glasgow et al., 2019), which enables a systematic assessment of processes, deliverables and outcomes across the project. The RE-AIM framework focuses on five dimensions; as applied to this project, they are:

- **Reach:** The extent to which the intervention engages and benefits the target population.
- **Effectiveness:** The extent to which the intervention achieved its desired outcomes in terms of awareness, behaviour change, and cultural humility.
- **Adoption:** The extent to which healthcare providers and community partners adopt the intervention and integrate it into their practices.
- **Implementation:** The fidelity and quality of intervention delivery across different phases of the project.
- **Maintenance:** The sustainability of intervention effects and continued use of project resources over time.

For Phases 1 and 2, RE-AIM was applied to identify possible implications of the activities and outcomes to the intervention. For example, for 'Reach,' Phases 1 and 2 are preparatory and planning phases, during which the questions 'Who is the intervention aiming to reach? How do we reach them?' would ideally be answered, to inform the intervention design and dissemination in Phases 2 and 3.

The next sections provide the descriptions of each phase, along with Social Machines' evaluations.

Phase 1: Understanding the Local Needs

Aims and Activities

Phase 1 focused on understanding the needs, barriers, and preferences for headaches and migraine care in Birmingham's Pakistani communities. It aimed to build the evidence base for culturally informed interventions in Phase 2. BCC Public Health took a three-pronged approach to assess the local needs, which was informed by the following:

1. **Community-Led Qualitative Research.** Led by BVSC, 40 interviews were conducted by 9 trained community researchers (CRs). CRs were paid £150 per day for their work. The interviews focused on cultural perceptions, barriers, treatments and contributing factors to headaches and migraines.
2. **Quantitative Clinical Data Analysis.** Led by BCC's Public Health data analysts, general practice (GP) and Hospital Episode Statistics (HES) data (2022-2024) were examined. Data analysis focused on headache/migraine prevalence, prescription patterns, and hospitalisation data.
3. **Be Heard Community Survey.** Led by BCC's Public Health team, an online community survey was hosted via Be Heard. The focus of the survey was on self-reported headache experiences, treatment choices and the impact of headaches/migraines on one's life.

Outputs and Insights

BVSC produced a report and a public-facing poster summarising the methods and findings of their research (Appendix 2). The BCC data analysts developed an academic conference-style poster summarising their analysis and results (Appendix 2). Finally, BCC's Public Health team produced a report summarising the insights across the three approaches. Key insights obtained from this phase included the following.

Community-Led Qualitative Research

CRs were instructed to interview individuals within their network (i.e., friends, work associates, family, community members they know) who meet the demographic scope specified by BCC: smokers aged 18 or above, those with high blood pressure aged 18-65, or working aged women.

CR's qualitative interviews found that Pakistani individuals faced several barriers in navigating experiences with headaches/migraines. These included:

- A lack of understanding from others which may stem from gender and ethnic biases
- A lack of cultural humility among HCPs
- Challenges with health literacy

- Logistical and practical barriers to treatment

The interviewees believed that a variety of factors contributed to their headache/migraine experiences, such as stress, diet and lifestyle, environmental triggers, and underlying medical conditions. They also noted how headaches and migraines caused not only physical but also emotional distress. Cultural expectations and beliefs, such as stigma from friends and family, around health impacted understanding of treatment of headaches and migraines. Finally, participants noted their current treatment approaches (self-prescribed and otherwise) in mitigating the headache effects. Treatments that were mentioned included: over the counter painkillers, prescription medication, medical procedures, and home and traditional remedies. Participants highlighted the need for cultural humility among HCPs, holistic and patient-centred care, empowerment of patients to understand and self-manage their headaches, and accessible resources in appropriate formats and locations.

Quantitative Clinical Data Analysis

The Council's Public Health Knowledge, Evidence and Governance team analysed GP and HES data. The GP data were from 176 GP practices across Birmingham from February 2023 to February 2024. HES data were pseudonymised patient data from Birmingham & Solihull ICB, where headaches (ICD10 code R51) and migraines (ICD10 code G43) were the primary diagnosis, from the 2022/2023 financial year.

Statistical analysis showed that while the Pakistani population exhibits a migraine prevalence and prescription rate broadly in line with the city average, the age-standardised hospitalisation rate is markedly higher (59%) than the Birmingham average. This discrepancy suggests potential gaps in early intervention, gaps in appropriate management in the community or gaps in access to appropriate care pathways for this community.

Be Heard Community Survey

BCC Public Health hosted an online survey on the Council's Be Heard platform, in English and Urdu. Only the English survey received any responses (102 in total). BCC Public Health applied the eligibility criteria, which were that respondents needed to:

- Identify as Pakistani or British Pakistani
- Be aged 18 or older
- Reside in Birmingham
- Experience a headache/migraine at least once in the past year.

Screening the responses with these criteria led to 93 eligible respondents. The most common headache frequency was 1-5 days in the last 30 days (43%, n = 40), with variable duration. Half of the respondents (49.5%) had been formally diagnosed with migraines by a doctor or nurse. Pain intensity was rated on a scale of 1-10, with 7 being the most common score (n = 20) followed by 10, which is severe (n = 19). Headaches sometimes interfered with daily activities for 65.6% of respondents. In terms of impact on their daily

lives, 68.8% reported missing social, family, or leisure activities in the past three months because of their headaches, but 53.8% had not missed work, education, or training.

Half of the respondents (53.8%) had not received medication from a doctor, while 69.9% of respondents used home treatments, alternative therapies, or other remedies for their headaches or migraines. Most respondents used prescription or over the counter medication on 1-5 days in a usual month (n = 40), while 17 respondents reported not taking any medication in a usual month.

Evaluation

Methods

Social Machines evaluated the processes in Phase 1 through the following means:

1. Interviews with two CRs to understand their experiences. One researcher at Social Machines conducted a brief (30-minute) interview with each of the CRs. The interviewer used questions and prompts that focused on:
 - a. Recruitment and training of CRs by BVSC
 - b. Interviews and participant recruitment by the CRs
 - c. Involvement in the thematic workshop.
2. Interviews with the two data analysts who conducted the quantitative clinical data analysis. One researcher at Social Machines conducted a 1-hour interview with each of the analysts, focusing on:
 - a. The analysts' involvement and activities in the project
 - b. Robustness of the processes and quality of the outputs
 - c. Learnings and recommendations for future projects.

Social Machines integrated the insights from these interviews with their review of the Phase 1 reports that were produced by BCC Public Health and BVSC, to identify implications for the intervention in line with the RE-AIM framework.

Process Evaluation Findings

Community-Led Qualitative Research

Social Machines interviewed two CRs (that were available and willing to be interviewed at the time) to assess their experience in Phase 1. Both CRs had a positive experience with some notes on where the process can be improved. Below is a synthesis of interview findings but it must be cautioned that the findings are from two perspectives only.

What worked:

- **Engagement and enthusiasm:** Both CRs were highly engaged, showing initiative and motivation to participate meaningfully. One CR for instance, conducted an extra interview outside the target sample size, while another CR designed her own flyer (although BVSC eventually told the CR that she could not use it).



- **Training and skills development:** Both CRs attended at least two of the three training sessions. One CR mentioned benefiting from the mentoring sessions to refine interviewing skills.
- **Personal connection:** CRs attributed their ability to interpret the interview data with empathy and understanding, to their personal connection with their interview participants.
- **Group sensemaking:** Thematic workshops were valuable to CRs as it helped them compare notes, identify themes, and identify commonalities and surprises across the data. The process helped the CRs feel heard and validated when their findings were reflected in the report.

What to reflect on:

- **Clarifying recruitment and data policy:** It appears that anonymity, confidentiality and data security concerns may have been confused among BVSC and CRs, and that CRs may have felt that there were mixed messages regarding these issues. For example, one CR said that BVSC asked her to take down a Canva flyer she made as this approach to recruitment would not preserve participant anonymity. However, this CR still needed to use her WhatsApp and personal contacts to conduct the interviews; she understandably felt that this did not preserve participant anonymity either. A clear policy on participant recruitment, data security, anonymity and confidentiality may help to prevent potential confusion and misunderstandings.
 - **Considering the downsides to convenience sampling:** The recruitment method (i.e., relying on CRs' personal networks) raises additional possible limitations:
 - The qualitative data may be limited in scope. Relying on one's personal networks carry the risk that the interviewees share similar experiences because they are also likely to be linked in other ways, such as being related, growing up in the same area, or having similar interests and values. This can reduce the representation of the diversity across Pakistani communities in Birmingham, which can in turn reduce the transferability of the insights
 - There may be potential emotional and ethical challenges, as CRs interviewed individuals that they know; one CR mentioned that she was surprised by something that was disclosed by the interview participant, and was not fully prepared to respond to the disclosure.
1. **Interview depth and duration:** BVSC said that interviews were planned to be around 45 minutes, but that the first interviews by CRs tended to be short, with the duration extending as CRs became more confident. Both of the CRs that Social Machines interviewed also mentioned that the interviews were shorter than what they anticipated; one CR mentioned that it was challenging to keep the conversation going (some interviews lasted 15-20 minutes) and the other CR said interviews lasted 10-15 minutes, with some longer ones (20-30 minutes). This indicates potential limitations:



- Based on qualitative interview best practices, it seems that at least some of the interviews were too short to gather in-depth data. In the future, it may be worth conducting pilot interviews to ensure enough interviews are conducted at an appropriate length and depth.
- Although the questions were worked through in the training with CRs, it may have been challenging for them to anticipate how the interviews would go with real participants. In the future, it may be beneficial to have the CRs regroup and suggest changes to the interview protocol after having conducted some of the interviews, so that they can adapt their approach in a consistent and collaborative way.

In addition, BVSC reported limitations of the research that CRs had highlighted:

- Some potential participants declined to take part in the research due to time constraints, mistrust of medical research, fears about data sharing with the NHS, and worries about confidentiality within their community. However, others valued the effort to include underrepresented voices and felt more comfortable engaging with researchers from their own community.
- Stigma around mental health made some participants reluctant to discuss related issues openly, preferring to frame them as 'wellbeing' or 'stress.' This stigma likely led to underreporting of mental health problems and demonstrated the need for continued community engagement and culturally sensitive approaches.

Quantitative Clinical Data Analysis

Social Machines interviewed two BCC data analysts who conducted the quantitative analysis on GP and Hospital Episode Statistics. The analysis focused on the general Pakistani community as it could not segment by the three demographic categories (i.e., smokers; those with high blood pressure; and working age women).

What went well:

- **Working style:** Both analysts found the agile, collaborative working style - especially in executing exploratory data analysis - to be useful. The iterative meetings in their team of three helped in providing frequent feedback and routes to course-corrections based on what data was available. The primary data analyst appreciated the degree of autonomy in implementing analysis coupled with mentorship and strategic guidance from the two other team members. Agile methods for working were especially facilitated by open channels for discussion and support.
- **Effective visualisation:** The analysts mentioned effective use of data visualisation tools such as funnel plots to interpret and communicate findings, which were included in external-facing outputs (i.e., poster for hackathon). This approach aided in translating complex data into accessible visuals for broader audiences, focusing on patterns in the data and avoid over-stating the findings.



- **Data quality:** The analysts reported that the hospitalisation dataset (from NHS Digital) was robust, meaning stronger conclusions came from this source compared to GP data.
- **Usefulness of the findings:** The analysts recognised that although the methods would not meet academic publication standards, the work was still pragmatic and valuable for public health insights. They stressed not overclaiming the findings, instead focusing on descriptive trends and using them to shape further investigation or service planning.

What to reflect on:

- **Data access:** There were many setbacks when trying to secure ethical approval to access and use the GP data for this project.
- **Data structure:** Analysing the incomplete, unstructured, and pre-aggregated GP data was challenging. The available data sets did not have clear documentations and explanations (e.g., on how the data was collected and what each variable means), making it difficult for the analysts to navigate them. Both analysts repeatedly noted that they could not speak directly with the data providers; they believe that, if they could, they would have been better able to interpret the data. They also mentioned that they were brought in after data had already been procured, which limited their ability to shape the dataset to fit the research questions.
- **Longitudinal data:** Although they were not expected to do so (as it was out of scope of this research), the analysts noted their inability to track individual patients across appointments and prescriptions or track continuity of care with the data they had. Relatedly, the GP data only covered about one year, making it harder to decipher patterns.
- **Demographic data:** Differences in ethnicity coding between systems had to be harmonised manually, which was time-consuming. Moreover, there were no age or gender information in the GP data, making it impossible to control for known confounding factors (e.g., age-based migraine risk).

In sum, the data analysts navigated a complex dataset and had limited control and clarity over the access and structure of the dataset. Despite these challenges, they reported having a positive experience working flexibly and collaboratively, and were able to extract meaningful, population-level insights to produce visualisations for public engagement. Future iterations should consider how to involve data analysts from early stages and connect them with data providers so that the datasets are suitable to the research aims.

Implications for Intervention

In Phase 1, the assessment of local needs used a multi-pronged approach, with community-led research, clinical data analysis, and city-wide survey, which promoted wide engagement and generated relevant insights. Below, implications for the project's interventions are described along the RE-AIM framework.

Reach

In Phase 1, insights obtained to understand the local need would ideally help define and solidify the target population for the intervention, i.e., who is the intervention aiming to reach?

The target population was Pakistani communities in Birmingham, but BCC Public Health indicated in Phase 1 that they had decided to focus on smokers, individuals with high blood pressure, and working-aged women. This decision was established in the project proposal to Pfizer and was made based on a review of academic journals. However, these subgroups were not adequately reflected in the data collection and analysis. There were challenges in establishing clear, validated definitions for the subgroups within the population.

Although the CRs successfully leveraged their networks to conduct interviews, the sample was potentially limited in representation across Pakistani communities, which reduces the variety of insights and confidence in the findings. The clinical data analysis also highlighted concerns about defining the target population for the intervention because of challenges with inconsistent coding of ethnicity across systems and the lack of age or gender information in the GP data provided.

The Be Heard community survey also experienced a challenge with gathering data, as only 93 respondents completed the survey, and only within the English version of the survey. Language was identified as one of the barriers to seeking and obtaining medical advice or treatment. Thus, the lack of responses in the Urdu version of the survey is a concern; it suggests limited representation of relevant segments of the population – such as Pakistani individuals that understand Urdu but not English, do not speak either of these languages (and speak instead e.g., Punjabi or Mirpuri), have low literacy, and so on. Hosting the survey online may have also contributed to limited representation of individuals with low digital literacy or lack reliable access to digital devices and internet connection.

Similarly, across both the CR interviews and the Be Heard community survey, majority of respondents were female; although working-aged women were identified as one of the target groups, the other factors (smokers and individuals with high blood pressure) are present across genders in the population. The clinical data did not include these relevant identifiers (i.e., age, gender, smoking, high blood pressure) to support the understanding of these subgroups.

Effectiveness

Effectiveness should be defined when designing an intervention, i.e., what impacts are expected from the intervention? Phase 1 generated important insights into the needs of the local community, and thus the key areas in which the intervention aimed to change.

Specifically, insights from Phase 1 suggested the need to change the behaviours, practices, attitudes, and beliefs of healthcare professionals and members of Pakistani communities in Birmingham. The needs could be reframed as effectiveness or efficacy goals for the intervention, summarised below.

Among healthcare professionals (HCPs) in Birmingham:

- Improve cultural awareness and empathetic communication toward patients from Pakistani communities.
- Explore the integration of traditional remedies, trusted by the community, with clinical treatment where appropriate.

Among Pakistani communities in Birmingham:

- Increase awareness about headache symptoms, triggers, and treatments.
- Increase knowledge and skills on self-care strategies for headaches and migraines.
- Reduce the stigma around seeking medical support for the treatment of headaches and migraines.

The identified goals are specific to the local needs and solidified by the evidence gathered in Phase 1. However, the aims of the interventions could have been specified by defining the magnitude, characteristics and timescales for the desired impacts, e.g., short-, medium- and long-term impacts. Clearly, many of the above goals are challenging (e.g., reducing stigma across entire communities), which provides more reasons to distinguish between achievable short-term goals and aspirational long-term goals with the understanding that long-term goals would require, for instance, continued investment of resources and adaptation of the interventions over time. It is important to emphasise that this project is a first step toward future interventions and the achievement of longer term outcomes in access to health services.

Moreover, BCC Public Health had set out to increase HCPs' cultural humility at the start of the project. Phase 1 aimed to build an understanding of the issues, needs and experiences within the Pakistani communities, which naturally meant that engagement focused on Pakistani communities. However, this also meant that there was limited focus on identifying the issues and needs among HCPs - e.g., evaluating their cultural humility and which aspects of cultural humility benefits most from an intervention. Doing so could have enhanced the intervention by specifically targeting HCPs' gaps in cultural humility.

Adoption

'Adoption' concerns the venues, settings and locations that would adopt the intervention. Phase 1 revealed the need to collaborate across organisations and settings to reach and engage Pakistani communities in Birmingham. Indeed, there were already efforts to build a variety of relationships and communication channels; the community survey was promoted through social media (X, Facebook, and Instagram), BCC Public Health newsletters, Birmingham and Solihull Integrated Care Board (BSol ICB) newsletters, GP and pharmacy mailing lists, faith, and community networks, the BVSC website and The Delicate Mind network. Moreover, collaboration with BVSC and CRs (who were highly eager and engaged) signalled a strong basis for adoption of the intervention across settings.

Based on their findings, BCC Public Health also concluded that a culturally informed approach should additionally use trusted community spaces, such as mosques, schools, and community centres, to host resources or support groups. Exploring in-person spaces was not in scope of Phase 1, but it may have been beneficial if it had been included, e.g.,

by visiting mosques and community centres to understand their interests and willingness to collaborate or adopt the intervention. Engaging with HCPs to support the adoption of the interventions in GP and pharmacy settings were planned for Phases 2 and 3.

Implementation

'Implementation' concerns whether the intervention can be delivered as intended and within expected time and resources. Some of the more concrete plans that BCC Public Health stated at the end of Phase 1 were to launch awareness campaigns in both Urdu and English about headache symptoms, triggers, and treatments, provide materials in multiple formats (e.g., audio, visual, and written) and languages, and to use community spaces to host resources or support groups.

At this point, these plans indicate a need for processes to ensure accuracy and culturally appropriate use of languages (e.g., translation work, consultations with the community), and to develop appealing and user-friendly materials (e.g., professional design, recording, filming). Establishing collaboration helps to put these processes in place, e.g., with BVSC, CRs, and The Delicate Mind. Indeed, BCC Public Health had already sought to develop these relationships by the end of Phase 1.

Other aims that were established in Phase 1 included improving cultural awareness and empathetic communication among HCPs, promote self-care strategies and reduce stigma around seeking medical support for headaches and migraines, and explore the integration of traditional remedies with clinical treatment where appropriate. Concrete implementation plans were not developed in Phase 1 across these aims, as Phase 2 (co-design) was needed to solidify the interventions.

Maintenance

Overall, Phase 1 activities indicated several promising opportunities for developing a sustainable intervention. For instance, recruiting a motivated team of CRs and building their skillset in community research can help to implement future evaluations and hearing community voices, which in turn can support the intervention's continuous improvement. However, similar to 'Effectiveness,' it seemed that ideas and plans around how the intervention will be maintained over time were not explored in Phase 1. This is understandable, given that in Phase 1, concrete plans for the intervention had not been developed.

Concluding Remarks

Phase 1 was a diagnostic stage – identifying where the needs lie within the community. The three-pronged approach provided a strong mix of qualitative community insights combined with quantitative data. A key strength of Phase 1 was its commitment to community engagement and collaboration. The use of trained CRs likely helped to build community trust, surfaced nuanced insights, and helped validate lived experience as an essential source of knowledge. Simultaneously, the clinical data analysis added credibility by identifying systemic care gaps. However, the process evaluation and the analysis of potential implications for the intervention highlighted critical lessons, such as limitations to data collection and data access.

Phase 2: Co-Design with Community and Healthcare Professionals

Aims and Activities

Phase 2 leveraged a local community organisation, TDM, to co-produce culturally informed materials (namely booklets, posters and videos) that are contextually appropriate and acceptable to Pakistani communities in Birmingham.

1. **Focus groups and interviews:** TDM designed and conducted focus groups and interviews with Pakistani community members and HCPs to gather their perspectives on the appropriate focus, format, and type of culturally informed materials related to headaches and migraines.
2. **Co-production sessions:** TDM conducted co-production sessions, again with Pakistani community members and HCPs, to collaboratively develop ideas and solutions to address the gaps and needs identified. Using the insights from these sessions, TDM developed culturally informed resources on headaches and migraines.
3. **Resource refinement:** The initial versions of the resources were then re-produced in collaboration with BCC Public Health, with the goal of providing a more polished and professional appearance to the resources. QR codes that led to the page on BCC's website that hosted the materials were also added onto the resources to enable tracking from which resources the website was accessed. The contents of the culturally informed resources were also reviewed for accuracy by a consultant neurologist at the University Hospitals Birmingham NHS Foundation Trust.

The BCC Project Team advised TDM to work collaboratively with the CRs from Phase 1 during the co-design process in Phase 2. However, the extent of this collaboration remains unclear.

Outputs and Insights

Focus Groups and Interviews

Methodology

The focus groups and interviews took place in January 2025. The purpose of the focus groups and interviews with Pakistani community members was to gather their perspectives on the necessary focus, format and type of materials needed to build health literacy in the community, communicate pain related to chronic headaches and migraines and how to self-treat or seek treatment. For the HCPs, the research aimed to gather their perspectives on the focus, format and type of materials required to understand the prevalence of

chronic headaches and migraines within the Pakistani community, as well as materials that would improve health literacy within the community and effective diagnosis by professionals.

Across the focus groups and interviews, 18 members of the Pakistani community and 16 HCPs participated.

- Among the Pakistani community members, 6 were smokers, 3 people had a high blood pressure, and 9 were working-aged women.
- The HCPs worked across healthcare settings, including GPs, pharmacies, and mental health services; 8 were women and 4 identified as belonging to the Pakistani community.

To best facilitate the sessions, the project team was made up of three members of the Pakistani community and one member from a non-British white background. All team members had lived experience of chronic headaches or migraines.

Both groups of participants were asked about:

- Their knowledge about misconceptions in the community about headaches and migraines, and barriers to seeking medical help.

Members of the community were asked about:

- Their understanding of, and experiences with receiving information about, headaches and migraines.
- Their perspective on what information would help them self-manage headaches and migraines.
- Their perspectives on how health information should be designed and communicated, i.e., source of information, format, languages, cultural and religious considerations, traditional remedies.

HCPs were asked about:

- Their approach to engaging with and supporting patients from Pakistani communities for headaches and migraines, including how they make recommendations for treatment.
- Their experiences with existing resources, including whether they are effective for their Pakistani patients.

Insights from the Sessions

The focus groups generated several shared themes across both groups:

- A lack of trust and poor communication between community members and healthcare providers.
- Low awareness in the community on when to seek medical help.
- Stigma surrounding mental health and reluctance to link headaches to psychological stress.



- There was a desire for credible, accessible, visual health information in simple language and a preference for a trusted, community-based source of information.

There were also several insights unique to each group of participants:

- Members of the Pakistani community shared that they often felt dismissed or invalidated by GPs and relied heavily on Google, social media (e.g., TikTok) or family for advice.
- HCPs acknowledged a lack of culturally informed materials and were concerned about misinformation on social media.

Co-Production Sessions

Methodology

Co-production involved a series of in-person and online workshops, as well as one-to-one interviews. The research was conducted between February and March 2025.

In total, 16 members of the Pakistani community and 18 HCPs shared their experiences, perspectives, and ideas.

- 11 community members that participated in the focus groups and interviews by TDM returned to participate in the co-production sessions.
- Among the community participants, there were 6 smokers, 3 individuals with high blood pressure, and 9 women of working age.
- 4 of the HCPs identified as members of the Pakistani community.
- One community member participated in both the community and HCP co-production sessions.

Each session began with a recap of the findings (i.e., challenges and barriers identified), a discussion of those findings, and moved onto the co-design activities, which focused on the format, content, cultural and linguistic considerations, and the dissemination methods of the culturally informed resources.

Participants engaged in dynamic conversations, storytelling, and idea-sharing, building on each other's input in real time. No formal visuals were used, but vivid, descriptive language served as a key design tool.

Facilitators used prompts that were grounded in everyday life (i.e., 'What would catch your eye on a mosque noticeboard?') to spark ideas. Participants would then describe ideas like 'a colourful resource with pictures and a voice, like a story,' helping to shape accessible and culturally resonant concepts.

The workshop then moved to more practical lines of questioning, such as such as 'What would help your family consume this resource?'. This led to ideas like bilingual voice notes, TikTok/WhatsApp videos, mosque-based campaigns, and Urdu-English infographics.

Insights from the Sessions

The exploratory work in Phase 2 identified that chronic headaches and migraines were widely recognised by participants as disruptive to daily life and mental wellbeing. Multiple

barriers to accessing effective healthcare were identified, some of which built upon Phase 1 findings but some of which were unique to Phase 2 probing. The unique value-added insights included:

- Many participants lacked confidence in differentiating between headache types, understanding and identifying triggers, or recognising when symptoms warranted professional intervention.
- Pain was often normalised, with many seeing headaches as a routine part of life due to stress and responsibilities.
- Chronic pain felt invisible, leading to frustration when others, including professionals, dismissed their experience, as headaches/migraines can be difficult to prove or measure.
- Cultural norms around stoicism encouraged silence, especially among women, who feared being seen as weak if they spoke up.
- Awareness of migraine symptoms was low, with many unfamiliar with signs of headaches/migraines (i.e., aura, nausea, light sensitivity, or mood changes) beyond pain and fatigue.
- Describing pain was challenging, particularly across language and cultural barriers in medical settings. While 'pain is a universal language,' participants noted that medical terminology often didn't reflect their lived experience.
- There was a disconnect with NHS care, in which a lack of integration between clinical advice and cultural practices (i.e., cupping, black seed oil or prayers) left participants feeling they had to choose between two systems, rather than navigate both in a supported way.

Culturally Informed Resources

Resources were shaped and defined by lived experiences, such as how individuals access, trust, and act on health information in their daily lives. Community members shaped not just the content, but the tone, format, and delivery of proposed resources. Importantly, the population break down in Phase 2 was able to capture the three key predefined population segments in thematic analysis. However, the ultimate outputs of culturally informed materials were oriented towards the general Pakistani population instead of tailored communications to each of these groups, given limited capacity and resources to do so.

The collaborative process initially led to the development of culturally informed information resources. The resources were created after the focus groups and co-design workshops had taken place. The co-design workshops explored what would be best suited for the community, and as the resources were created after these workshops they were fed back to the team and community members to be 'sense checked.'

As noted above, BCC Public Health re-produced the resources after iterations of feedback. Screenshots of these original resources and the finalised versions (which were disseminated in Phase 3) can be found in Appendix 3.

- Short videos in English and Urdu (with British Sign Language).
- Community guide (booklet) – Available in both English and Urdu as a printed copy, only available in English online.
- Posters in English and Urdu.
- Healthcare professional guide – Currently only available in English (based on feedback that only English was required).

Evaluation

Methods

Social Machines evaluated Phase 2 by observing three online co-production sessions that were conducted by TDM: one session with around 3 HCPs and two sessions with around 7 Pakistani participants in total. Social Machines also reviewed TDM's final two reports from Phase 2 (one on the focus groups and interviews, and one on the co-production sessions), and integrated notes from monthly meetings with BCC Public Health on the progress and challenges during Phase 2.

Process Evaluation Findings

What went well:

The focus groups, interviews, and co-production were carried out with inclusive, sensitive, and ethical practices, including:

- Offering a variety of methods to participate – in group settings, one-to-one, in-person, and online.
- Prioritising lived experiences and seeking to understand contextual and culturally specific perspectives.
- Seeking consent to record the sessions and facilitating the sessions to ensure participants are comfortable.
- Recruiting participants across the target subgroups and across genders. A variety of roles and settings were represented across HCPs as well.

Beyond these procedural elements, the positive aspects of Phase 2 activities that impact the intervention content and delivery are discussed later in this section (Implications for Intervention).

What to reflect on:

- Co-production sessions appeared to combine focus group and workshop elements, which created internal incoherence (i.e., the sessions moved into focus group discussion formats at some points). This confusion led to lack of clarity in the objectives of each task within Phase 2.
- It appears that the resources did not undergo piloting or testing before finalisation in a structured way and instead relied on ad-hoc processes which – while iterative –



make the process subject to potential biases from the designers, as opposed to reflecting the ideas of the community.

- There appeared to be initial challenges in TDM's deliverables being accepted by BCC Public Health, such as the Phase 2 reports and culturally informed resources. As noted above, the resources were re-produced (e.g., videos were filmed again, written guides re-designed) after the initial delivery by TDM.

Such challenges raise future opportunities for setting up projects to enable community organisations to succeed, for example:

- Collaborative decision-making about deliverables and goals at the outset between BCC Public Health and community organisations.
- Clarifying deliverable quality metrics and standards at the outset and offering sufficient support to enable the community organisation to meet the standards.
- Allocating time and monetary resources to each activity (e.g., filming and editing a video) in a way that leverages the strengths of community organisations and community members (e.g., hire a videographer from the community).

Implications for Intervention

Reach

The focus groups, interviews, and co-production sessions successfully engaged Pakistani community members and HCPs, recruited through social media, mailing lists, and word of mouth. The presence of multilingual participants added greater depth to the information gathered in the sessions. Holding some of the in-person sessions in an informal manner (e.g., over lunch at a restaurant) may have contributed to greater accessibility and reduced barriers to participation. The facilitator from TDM adopted a friendly and welcoming tone, creating a sense of shared experiences by referencing, for example, that some of the participants may be fasting.

However, participation tended to skew toward English speakers (translation support was provided but not used) and slightly toward female community members, which raises concerns about whether segments of the relevant population were unintentionally not represented in Phase 2 activities, despite efforts to recruit broadly and conduct the sessions in an inclusive manner. TDM used convenience and snowball sampling methods, which may have contributed to similarity (rather than diversity) among participants (given that individuals tend to have connections with those who are similar to them). For the online sessions that Social Machines observed, some participation challenges included technological difficulties (e.g., microphones and cameras), as well as participants arriving late or having to leave mid-session. Moreover, some participants voiced concern about Pfizer's role as a pharmaceutical company and the company's potential motivations for this project.

In turn, these challenges lead to potential concerns with the co-designed resources, given that certain ideas and feedback across Pakistani communities may have been missed, and that participants of the co-production sessions may not have been willing to share their thoughts without a clear sense of the project's aims.

In future projects, it may be helpful to expand recruitment through community channels (e.g., mosques, GP surgeries, British Pakistani influencers on social media), and offer asynchronous participation options (e.g., voice notes, WhatsApp prompts, forms at community centres) for those facing scheduling or technological challenges. Finally, acknowledging and addressing funding transparency early in the engagements could help to build trust between the commissioning organisation and the community. For example, the commissioning organisation and the community organisation can agree at the outset on how best to communicate to the community about the project's funding source and its influence on the project.

Effectiveness and Maintenance

The co-production sessions aimed to inform the content, design, and format of the resources. Participants across sessions identified strong cultural, linguistic, and social relevance as essential for effective communication. The sessions also revealed clear preferences for multimedia and accessible formats and trusted professional voices. Conversations around stigma reduction and culturally informed GP practice further reinforced what an effective intervention should look like. The sessions provided validation to the directions and goals developed in Phase 1, regarding what impacts would be desirable.

Although the maintenance of the intervention (in terms of its long-term effects and sustainability in offering the intervention) was likely challenging to establish at this point, the co-production sessions could have discussed expected impacts and strategies to mitigate weakening effects or to prevent the dissolution of the intervention over time (e.g., How can community members and HCPs feedback to BCC Public Health on the resources to ensure they are up-to-date?).

Adoption and Implementation

Attitudes about potential for adoption and implementation of the intervention (resources) varied between stakeholder groups. Community participants appeared enthusiastic about practical, culturally adapted formats. Participants actively contributed to the discussion, responding to prompts and building on each other's ideas. There appeared to be a good level of rapport between the facilitator and participants.

In contrast, HCPs (during the session that Social Machines observed) appeared hesitant to speak. For each question posed by the facilitator, typically only one participant responded before the group moved on to the next topic. This raises concerns about whether the developed resources would be seen as acceptable to the co-production session participants, particularly the HCPs. The co-production sessions could have gathered more insights into dissemination strategies for the resources to enable smooth adoption and implementation. This topic was not specified in the requirements for this project, but commissioning organisations should consider it in future projects.

Concluding Remarks

In general, community engagement in Phase 2 was strong: Trust-building strategies like culturally safe settings, compensation, bilingual outputs worked well, especially in

engaging Pakistani women with lived experience. However, Phase 2 could have benefitted from better distinction between focus groups and co-production sessions. It is also unclear how much of the design concepts came from participants themselves versus pre-conceived by TDM, which poses a challenge to theories behind grassroots ownership of the culturally informed materials. Finally, the resources would have benefitted from more testing and piloting in the lead-up to finalising the designs.

Phase 3: Empowerment and Enablement

Aims and Activities

Phase 3 aimed to support an increased number of strategic community key informants (i.e., GPs, pharmacists, community influencers) who understand headache/migraine in a culturally relevant way and can improve public health awareness and engagement within Pakistani communities using the culturally informed materials produced in Phase 2. This involved two main activities:

1. **Community influencers** were recruited, trained and managed by BVSC to disseminate the informational resources in target locations across Birmingham.
2. **Briefing sessions** were held for GPs and pharmacists to attend and receive the information resources, for them to use and share.

A large portion of the impact evaluation for this project occurred at the same time, but the details for the impact evaluation efforts are described in Phase 4: Implementation and Evaluation.

Community Influencers

BCC Public Health commissioned BVSC to manage a team of community influencers (CIs). This activity involved the original community researchers (CRs) who worked on the project, alongside another member of the community who has been involved in developing resources and promotional materials. A training package, resource pack and code of conduct were created for the CIs. CIs were paid £150 a day for their work.

An introductory webinar was held for the CIs in mid-August 2025. In addition to distributing the resources, the CIs were asked to gather feedback and capture engagement as well. For this purpose, as detailed in Phase 4, a second Be Heard survey was created for community members to provide feedback on the resources.

Each CI was provided with at least:

- 30 community guides in Urdu
- 100 community guides in English
- 15 A3 posters in Urdu
- 15 A3 posters in English
- 10 printed Be Heard surveys (focused on resource feedback) in English
- 1 code of conduct document
- 1 spreadsheet to capture their engagement

The CIs were also expected to track the following:

- Number of community members who expressed they would use the resource in the future
- Number of community members who expressed they would seek further medical support
- Number of community members that CRs supported to fill in the QR code survey

ClIs, for instance, were expected to share the poster in 15 different locations/organisations in the city, share the community guides in 15 different spaces/organisations, and have 15 different intervention conversations across 3 days which would inform the community member of the resource and the evaluation survey prize draw.

Both the webinar and code of conduct gave the ClIs advice as to where to complete their influencing - predominantly east Birmingham within community spaces and businesses that have Pakistani clientele. An asset-based approach was adopted; the actual locations were left to the ClIs to identify and approach, using their local knowledge and networks. BVSC oversaw these choices via regular meetings with the ClIs, and a WhatsApp group was also used, to reduce any duplication of locations.

To facilitate the evaluation of their activities, ClIs were invited to focus groups in September 2025.

Healthcare Professionals

HCPs were recruited to support the distribution and use of the new information resources with the Pakistani communities in Birmingham, and with HCP colleagues.

40 GP practices from the East locality were contacted through targeted emails. Ten practices in East Birmingham with the highest migraine prescription rates were initially identified to target for recruitment, but the Project Team at BCC Public Health decided to widen the scope in Phase 3. 62 Pharmacies from East locality were contacted via targeted emails, outreach and from a stakeholder log.

BCC Public Health held briefing sessions at 4 different dates and times to explain the background and goals of the project, and the support they are seeking from HCPs. GPs and pharmacists were given guidance to use the HCP resources and disseminate community member resources (in the waiting rooms, website, during appointments). To support the evaluation, the HCPs were asked to complete an online survey prior to and after receiving the resources (described in more detail in Phase 4: Implementation and Evaluation). Each practice/location was offered £200 to attend (or view the recording of) one of the briefing sessions and complete the surveys.

BCC Public Health aimed to recruit 10 GPs and 10 pharmacies in the East Birmingham area. Out of the 12 individuals that expressed interest, 7 attended the briefing session: 4 GPs, 2 pharmacists, and 1 practice manager - although the activity aimed to engage HCP, and thus the practice manager is not eligible. Three individuals signed up to watch the recording: 1 practice manager, 1 GP, and 1 ANP (advanced nurse practitioner).

Evaluation

Given that a large portion of the impact evaluation (Phase 4) occurred at the same time as Phase 3 activities, details of the outcomes, successes, and challenges of Phase 3 activities are provided in Phase 4.

Concluding Remarks

Overall, Phase 3 demonstrated an important step toward embedding culturally informed resources within community and healthcare settings. The dual approach of mobilising CIs and engaging HCPs showed promise in extending the project's reach, particularly across East Birmingham's Pakistani communities. The autonomy afforded to CIs leveraged local trust networks effectively, though clearer parameters around evaluation metrics and consistency in data capture could strengthen future projects that use this approach. Similarly, while GP and pharmacy engagement reflected an encouraging start, participation numbers suggest that recruitment and sustained engagement strategies could be refined to ensure wider professional uptake. In summary, Phase 3 mobilised the relationships and momentum that were developed in the earlier phases to disseminate the resources in a community-driven and contextually sensitive manner.

Phase 4: Implementation and Evaluation

Aims and Activities

The main aim of Phase 4 was to conduct the process and impact evaluations of the entire project, analysing the reports and data obtained from the previous phases to assess fidelity, effectiveness, and sustainability. Moreover, the evaluation was expected to identify gaps and best practices, providing actionable insights for future projects. Social Machines was commissioned to conduct the evaluation, and the current report is the key output of this phase. In the short term, this report was expected to be disseminated to healthcare stakeholders, guiding best practices and knowledge sharing among healthcare providers in Birmingham, and helping them better understand cultural barriers to implement practical changes. More broadly, the evaluation was expected to act as a stepping stone to developing culturally informed care guidelines applicable in similar public health projects.

Social Machines was onboarded in late November 2024, around the time Phase 1 was concluding and Phase 2 was about to begin. As mentioned in the Introduction, Social Machines developed a Theory of Change and a tailored RE-AIM framework to solidify the approach to the evaluation of the project. The Theory of Change was developed in collaboration with BCC Public Health, BVSC, and The Delicate Mind, to ensure accuracy of the roles of each organisation and the aims of their tasks. Social Machines discussed the Theory of Change and its iteration with BVSC and The Delicate Mind over two workshops in December 2024 and January 2025. The Theory of Change and RE-AIM framework were shared to and revised based on feedback from the BCC Public Health team. Over the following 9 months, Social Machines directly gathered qualitative data (via interviews and observations), collected reports and data from BCC Public Health on the three Phases, and met with the Project Team for the BCIAHP project on a monthly basis to exchange updates and resolve issues or questions pertaining to the evaluation. All data collections concluded in September 2025, at which point Social Machines analysed and synthesised data to develop the current report.

Impact Evaluation

Methods

The impact evaluation relied on these main sources of quantitative and qualitative data:

1. **Focus group** with the community influencers (CIs) led by BVSC.
2. **Be Heard community survey** aimed to gather feedback on the resources distributed by BCC Public Health.
3. **Surveys of HCPs** led by BCC Public Health.
4. **Automated web data** led by BCC Public Health and supported by BCC's web team.

The next sections provide further details on the procedure and context for these data sources. Then, the findings across these data sources are summarised based on the RE-AIM framework.

Community Influencers

As mentioned in Phase 3, in August and September 2025, BCC Public Health commissioned BVSC to recruit, train and manage Community Influencers (CIs) to help distribute the resources and raise awareness about treatments and prevention of headaches and migraines. Six CRs from Phase 1 and an additional community member became CIs. Each CI received Urdu and English guides, posters, surveys, and tracking tools. To evaluate the impact and process of the Community Influencer activities, two focus groups (in-person and online), were also conducted by BVSC.

Be Heard Community Survey

The online community survey aimed to gather feedback on the distributed resources from the target audience, namely Pakistani individuals in Birmingham who experience headaches or migraines or are carers for someone who does, and who have seen at least one of the resources. The survey was hosted on the council's Be Heard online platform, became live in August 2025 and is expected to stay open until November 2025. Due to concerns about community members not being able to access the online survey, a hardcopy paper version of the survey was created and made available through the community influencers. To incentivise survey completion, respondents were given the choice to enter into a prize draw to win one of four £25 vouchers.

For the current report, responses gathered (online and hardcopy) up to 19 September 2025 were analysed. At the time, the online survey had received 24 responses and there were 2 hardcopy responses. Of these, 5 respondents (completed online) were not eligible: one respondent did not experience and was not a carer for someone that experiences headaches or migraines, and four respondents had not seen any of the resources. This resulted in 21 eligible responses. Two respondents were carers while all other respondents reported experiencing headaches or migraines. As shown in Table 1 below, most respondents were female and were mostly middle-aged or young adults.

Table 1. Community Survey Respondents Age and Gender

	Age					
Gender	18-24	25-34	35-44	45-54	55-64	Grand Total
Female	2	4	6	3	2	17
Male	1	0	1	1	0	3
Prefer not to say	0	0	0	1	0	1
Grand Total	3	4	7	5	2	21

All respondents reported their religion or belief as Muslim, except one respondent who declined to respond. As shown in Table 2 below, most respondents were employed or self-employed.

Table 2. Personal Situations of Community Survey Respondents

Personal Situation	Count
Employed or self-employed	12
Homemaker or housewife	3
Retired	1
Student	4
Unemployed	1
Grand Total	21

- Most respondents were non-smokers (16 respondents), whereas others reported smoking (3 respondents) or sometimes smoking (2 respondents).
- Four respondents reported that they have been told by a doctor or nurse that they have high blood pressure.

Given the small number of responses, Social Machines focused on descriptive statistics and mapped the findings onto the RE-AIM framework.

Healthcare Professionals Survey

BCC Public Health asked the healthcare professionals (HCPs) that participated in the briefing sessions to complete a survey before (pre-survey) and after (post-survey) their engagement with the resources. There were 10 respondents in the pre-survey, but of these, 3 responses were deemed ineligible because the respondents were practice managers and there were no indications that they were completing the survey on behalf of the HCP at the GP or pharmacy. The remaining 7 respondents completed the post-survey as well.

Thus, in total, 7 HCPs completed the pre- and post-surveys.

- 5 responses were from GPs and 2 from pharmacies
- 6 respondents were Pakistani.
- 4 HCPs reported seeing 5-15 patients for consultation in a typical month for headaches and migraines, and 3 HCPs reported seeing 16-30 patients (approximately one patient every 1-2 days).
- The HCPs' estimated proportion of their headache and migraine consultations who are from Pakistani communities were variable, ranging from 1-25% to 76-100%.

At pre-survey, HCPs were asked about their levels of cultural awareness, understand and difficulties when providing care to their patients, and pre-existing resources (such as books, leaflets, websites, journals, apps, videos) that they may use when delivering care, information and advice to patients from Pakistani communities for their headaches and migraines.

At post-survey, they were again asked about their cultural awareness, understanding and difficulties with providing care, and specifically about two sets of resources that they received:

- The GREEN community resources, i.e. the A3 headache and migraine poster and the A5 community guide titled 'A Guide to Understanding and Managing Headaches for Pakistani Communities'
- The BLUE healthcare professional resource (A4), titled 'A Guide to Discussing Headaches and Migraines with Pakistani Communities'

Web Metrics

Some additional insights about the success of the intervention can be gained through using Google analytics on QR codes that were used, download counts, and the number of times different links were clicked. Whilst this is a useful tool, it must be remembered that often website users reject cookies on websites, meaning that one cannot legally track their movements. To combat this slightly, Google estimates the number of people rejecting cookies and take this into account in their analytics output. This may lead to some inconsistencies in totals and mean that over time, the historic numbers may change slightly.

Google analytics data collected for the period of 21 August 2025 to 19 September 2025 were examined.

Findings

Reach

The extent to which the intervention engages and benefits the target population.

Community Influencers

As show in Table 3, the seven Community Influencers (CIs) were able to reach over 100 locations, distributing over 100 posters and close to 700 guides.

Table 3. Dissemination and Engagement Performance among Community Influencers

Metric	Count
Locations visited	117
Posters distributed	114
Guides distributed	671
Conversations held	257
Surveys completed	22

The CIs reported that the interest on the topic was high among the community. Community members appreciated the attention to headaches and Public Health's focus on Pakistani populations and liked having bilingual materials. The videos accompanying the materials, and clear, visually appealing content and infographics were well-received.

According to the CIs, whereas the posters and videos were received well, much of the negative feedback focused on the perceived inaccuracies within the Urdu version of the community guide. The CIs observed that if these discrepancies were addressed, then the resources would be useful and received well by the community. Some of the issues that the CIs raised were the following.

- **Further clarity needed for medical advice:** Advice to see a GP was perceived as contradicting NHS' Pharmacy First service, and despite the guides containing several pages on non-medication treatments, it was felt that the resources over-emphasised painkillers without adequate precautions. It may be that re-framing and presenting the information differently would resolve this potential concern.
- **Cultural appropriateness:** Translations were perceived to lack faith sensitivity; certain phrases (e.g., 'downward-facing dog') were seen as offensive. Concepts like Ayurvedic medicine and yoga conflicted with Islamic beliefs. Some guidance (e.g., avoiding ghee) was questioned as culturally inaccurate.
- **Language issues:** Weaknesses in Urdu translations (including on posters and guides) reduced credibility; although the translations were deemed accurate, it is possible that they could have been better tailored to relevant communities to ensure greater cultural awareness and sensitivity. In addition, the guides felt too text-heavy and complex for audiences with limited English or Urdu literacy.

Note that the CIs themselves are part of the community, and as such the degree to which they were engaged and benefitted during this activity is also important. Although the CIs were proud of their achievement and expressed a desire to continue their involvement, they were dissatisfied with the following elements.

- They felt excluded from resource development; they felt that they could have prevented some of the issues mentioned above.
- They were concerned that translation mistakes harmed their credibility.



- They wanted recognition in the resources for their prior research contributions.

As a reminder, BCC Project Team asked TDM to collaborate with CRs from Phase 1 in the co-design process, although the extent to which this collaboration occurred is unclear. Moreover, HCPs were involved in co-designing the resources, and the resources were checked for accuracy. The above feedback and concerns showcase opportunities to further enhance cultural awareness and relevance.

Be Heard Community Survey

Most respondents thought that the resources were appropriate for Pakistani communities, particularly with regards to types of headaches and migraines, medications, and cultural focus. However, the survey indicated several potential issues:

- One respondent said that the resources were confusing because they did not explain why the Pakistani community was targeted for headaches and migraines, and because the information is relevant across South Asian communities.
- One respondent said that the use of Indian terminologies (e.g., ayurvedic) was confusing or inappropriate, saying that they 'found nothing Pakistani about the booklet.'
- A few respondents also noted that there were typographical errors in the Urdu versions of the resources.

The responses from the community showed that the main way in which respondents found the resources (i.e., video, poster, or booklet) were through the BCC websites. However, this finding does not necessarily suggest that the websites are the best means of resource distribution. Because the Be Heard survey was hosted online on BCC's platform, it is likely that individuals who were already on these sites were more likely to respond to the survey, compared to individuals who found the resources through other means (e.g., GP, Pharmacist, community spaces). Indeed, when asked what they think are the best ways to share information on headaches and migraines for Pakistani communities (Table 4), the most popular options were social media (Facebook and Instagram) and community-specific channels (community magazine/newspaper and in-person at a community centre or religious venue).

Table 4. Preferred Methods of Sharing Information (Community Survey)

Options	Grand Total
Facebook	10
Instagram	12
X (formerly Twitter)	3
Mail or post	6
Email	9
Apps	9
Community magazine/newspaper	10
In person (community centre or religious venue)	10

Note: The question was 'What is the best way to share information on headaches and migraines for Pakistani communities? (select all that apply)'. 2 people additionally suggested TikTok.

Moreover, several respondents raised concerns about accessibility of the resources, saying that it needs to be accessible for older adults and reach out to those who are more often offline, e.g., school crossing patrol, workers in waste and parks areas. Respondents also suggested ways to make the information easier to understand; many suggestions focused on the design elements, such as using more diagrams and illustrations, using bullet points, using bigger and bold fonts, and using more basic and fewer words; others suggested expanding on accessibility, such as using braille and having face-to-face, small local group engagements.

The responses showed that the information was generally well-received. Out of the 21 respondents, most said that the information was helpful for managing their headaches or migraines. As shown in Table 5 and Table 6, they particularly found helpful the information about headaches, migraines, and how to prepare for talking to their doctor; moreover, many respondents reported that the information was interesting and easy to understand.

Table 5. Information that was Helpful (Community Survey)

Options	Grand Total
Information about headaches	15
Information about migraines	15
Information about traditional medicine	7
Information about the Pakistani community	9
Information about how to prepare for talking to your doctor	10

Note: The question was 'What information was most useful to you? (Select all that apply or enter your own response).' One individual that selected 'Other' said: 'Booklet informative. Poster good for visual effect.'

Table 6. What was Helpful about the Information (Community Survey)

Options	Grand Total
The information was interesting	10
The information was easy to understand	11
The diagrams were helpful	9
The supporting resources were useful	6
The information and style was tailored to the Pakistani community	7
Nothing was helpful or positive	0
Other (please specify)	2

Note: The question was: 'What was positive or helpful about the information? (Select all that apply or enter your own response).' One individual who selected 'Other' said: 'The: Urdu writing is backwards so not impressed by the welcome word. Booklet colour is Pakistani? Indian terms used not Pakistani e.g. ayurvedic'.

Finally, in an open-ended question at the end of the survey that asked for any other feedback, many respondents expressed positive attitudes, for example:

- 'Absolutely amazing guide and poster.'
- 'Diagrams [are] helpful for remembering information.'
- '...it was amazingly informative and I'm glad to see my thoughts on this was taken into consideration and was listened to.'
- 'The information was very useful and easy to understand.'
- 'Very interesting and informative. Thanks.'

Web Metrics

The written resources included QR codes which led to the section of BCC’s website that provided details and materials for BCIAHP. These QR codes were placed on ‘green community’ booklets and posters (in English and Urdu) in 3 different settings, and one QR code was placed on ‘blue healthcare professional’ booklets that were for healthcare settings. Google analytics data can be used to see which of the various QR codes were scanned – and potentially make inferences around which resources were the most popular (Table 7). The most scanned QR code was the one on the green booklet and posters in community settings. The blue healthcare professional booklets had the least scans, although this could be because HCPs who attended the briefing sessions were given direct links to the BCC website (and thus did not need to access the page via the QR code).

Table 7. Number of recorded scans of QR codes.

Source of QR Code	Number of Scans
English booklets and posters for community settings.	21
Urdu and English booklets and posters for GP settings.	5
Urdu and English booklets and posters for Pharmacy settings.	5
Healthcare professional booklets for healthcare settings.	2

How individuals have arrived at the BCIAHP pages and variations (Table 8) can help to identify the means through which individuals are accessing the resources (if at all). The most common pathway was through browsing the BCC website and arriving at the BCIAHP landing page. Note that the number of visits from QR code in this set of data (n = 30) differs from the above QR code data (n = 33), likely due to the abovementioned errors in Google analytics from accounting for rejected cookies.

Table 8. The performance of all of the BCIAHP web pages.

Description	Number of visits
Users that have come in via browsing the BCC website and visited the BCIAHP project landing page	142
Users that have come in via browsing the BCC website and clicked through to page 3 'BCIAHP project phases' of the project webpages	27
Users that have come in via a QR code	30
Users that have come in via browsing the BCC website and clicked through to page 2 'Why the project is working with Pakistani communities' of the project webpages	16
Users that have visited the 'BCIAHP supporting downloads' page	5

The potential reach of the resources can also be examined through analytics on how many times each resource was downloaded from the BCIAHP project webpage on the BCC website (Table 9). Of these resource files, the most successful were the English community resources. The most downloaded file was the English version of the 'Guide to understanding headaches and migraines for Pakistani communities' community guide, followed by the English community poster 'headaches and migraines are important health issues'. In contrast, the Urdu community poster had the least downloads.

Table 9. Number of downloads per online resource

Resource	Downloads
Community guide - English	51
Community poster - English	47
Healthcare Professional guide	13
Community Poster - Urdu	5

Overall, the web metrics indicate a positive but variable reach, such that certain resources (i.e., English community resources) were more likely to be accessed, and via the BCC website's BCIAHP landing page.

Effectiveness

The extent to which the intervention achieved its desired outcomes in terms of awareness, behaviour change, and cultural humility.

Community Influencers

The seven CIs said that many community members wanted follow-up information after engaging with CIs. Indeed, according to their data, out of the community members with whom they interacted, 59 said they would seek medical support.

Be Heard Community Survey

The survey showed that most respondents were at least somewhat likely to seek advice after using the information. Moreover, when asked to reflect on their knowledge about headaches and migraines before and after seeing the information, most respondents said that their knowledge increased, with a few respondents saying that their knowledge remained the same. Table 10 shows the combination of the two questions that asked about knowledge, with the number of respondents in each response option.

Table 10. Pre- and Post-Surveys Results on Knowledge Level

Post-survey					
Pre-survey	1 - No knowledge	2 - Little knowledge	3 - Fair knowledge	4 - Strong knowledge	5 - Expert
1 - No knowledge	0	0	0	1	0
2 - Little knowledge	0	0	2	4	
3 - Fair knowledge	0	0	6	5	0
4 - Strong knowledge	0	0	0	1	1
5 - Expert	0	0	0	0	0

Note. Pre-survey question was: 'How would you rate your previous knowledge level about headaches and migraines before seeing the information we provided?' Post-survey question was: 'How would you rate your current knowledge level about headaches and migraines after seeing the information we've provided?'

Moreover, out of the 19 respondents who experienced headaches and migraines (i.e., are not carers), most of them (12) said that they feel more confident about speaking to a GP. Similarly, most of them (15) said that they feel more in control of managing their headaches or migraines.

Healthcare Professionals (HCP) Survey

Overall, at pre-survey, the HCPs did not feel that existing resources help them provide care that respects the cultural needs of these patients; only one HCP (out of 7) said that they are helpful, and only 3 HCPs said that they would recommend these resources to HCP colleagues.

At post-survey, they were asked whether the community guide and poster that were provided to them were helpful in this regard (1 = not at all, 5 = somewhat, 10 = very much). All HCPs rated the community guide and poster above 5 (out of 10). Out of the 7 respondents, 6 said they would recommend these resources to other GPs/pharmacists.

Similarly, when asked about the HCP guide, the HCPs said that it helped them provide care that respects the cultural needs of their patients from Pakistani communities (5 responding 'Quite a bit'), and all of them said they would recommend the HCP guide to other GPs/pharmacists.

The HCPs were also asked to rate their level of cultural awareness when working with patients from Pakistani communities (on a 5-point scale, from Very poor to Very good). Table 11 shows their ratings at pre- and post-survey. At pre-survey, there was a spread in the HCPs' self-ratings. At post-survey, they were asked, 'After reading the healthcare professional guide, how would you rate your current level of cultural awareness when working with patients from Pakistani communities?' HCPs self-rated their cultural awareness more positively than they had at pre-survey.

Table 11. Pre- and Post-Surveys Results on Cultural Awareness

ID	Location	Cultural awareness (pre-survey)	Cultural awareness (post-survey)
4	GP	Very good	Very good
6	GP	Very good	Very good
7	GP	Very good	Very good
10	GP	Good	Very good
12	GP	Good	Good
8	Pharmacy	Fair	Very good
11	GP	Poor	Fair

The HCPs were also asked to self-rate their confidence in understanding how religion (e.g., Islam) may influence headache and migraine management in Pakistani communities (5-point scale, from Not all confident to Extremely confident). As shown in Table 12, all HCPs rated their confidence more highly at post-survey than at pre-survey.

Table 12. Pre- and Post-Survey Results on Confidence in Understanding the Impact of Religion

ID	Location	Confidence (pre-survey)	Confidence (post-survey)
7	GP	A little confident	Quite confident
11	GP	A little confident	Somewhat confident
8	Pharmacy	Somewhat confident	Extremely confident
10	GP	Somewhat confident	Quite confident
12	GP	Somewhat confident	Quite confident
4	GP	Quite confident	Extremely confident
6	GP	Quite confident	Extremely confident

Adoption

The extent to which healthcare providers and community partners adopt the intervention and integrate it into their practices.

Community Influencers

Overall, the CIs were effective in distributing the posters and guides; they found that venues such as libraries, schools, and community centres were receptive, particularly when CIs approached female staff members. The CIs also thought that the BCC logo on the resources helped signal their credibility to the venues.

However, the CIs highlighted several challenges:

- They had difficulty obtaining permission to display materials, given limited wall space for large posters.
- All the CIs were women, and as such, they had difficulty accessing mosques that were predominantly for men. Conservative areas were particularly challenging to engage, due to gender norms.
- Some mosques also required prior content review by the management team before any resources can be distributed.
- Some venues resisted promoting health messages, citing religious fatalism ('Everything is in God's hands').
- Some locations were reluctant to share the resources because they did not want to be accountable for the information in them.

Healthcare Professionals (HCP) Survey

Prior to receiving the resources, HCPs were asked about their use of pre-existing resources (books, leaflets, websites, journals, apps, videos, etc.) when delivering care, information and advice to patients from Pakistani communities for their headaches and migraines. As

shown in Table 13, these resources were not frequently used. When asked whether they think these resources are helpful and suitable for patients from Pakistani communities, only one respondent said 'Yes.'

Table 13. Use of Pre-existing Resources

Options	Count
Almost every relevant appointment	1
About half of all relevant appointments	1
Less than half of all relevant appointments	3
Never	2
Grand Total	7

After receiving the resources from BCC Public Health, all HCPs reported that they shared the community guide with patients from Pakistani communities, and all HCPs thought that the community guide and/or poster were suitable for these patients.

Out of the 7 HCPs, five said that they think the community guide and/or poster are helpful for these patients. When asked to comment on the ways in which they are helpful or unhelpful, 4 HCPs mentioned language and literacy ('the fact that they are in Urdu is helpful', 'many patients do not speak or read English but find it easy to understand the pictures'). The HCPs appreciated certain guidance for the patients, including encouraging patients to use a headache diary, to prepare to describe the headache for consultation, and to consider various causes of headaches. However, one HCP took issue with the advice to speak to a GP or pharmacist about traditional medicine and herbal treatments, because HCPs are usually not trained to advise on these topics. Several HCPs were also hesitant to make strong conclusions about the resources, given that they only recently started distributing them, and because they lacked direct positive feedback from the patients.

Similarly, the HCPs used the HCP guide in half of all relevant appointments (3 HCPs) or all relevant appointments (4 HCPs). All HCPs thought that this guide was suitable and helpful when delivering care to patients from Pakistani communities. When asked in what ways the guide is helpful or unhelpful, some HCPs pointed to specific elements of the guide, such as 'facts and figures' to support their discussion with patients, 'types of headaches,' 'self-care,' and content that allows them to 'allude to gender roles.' However, one HCP (who is Pakistani) expressed that the guide is 'more helpful for doctors who are not from the Asian community.'

Implementation

The fidelity and quality of intervention delivery across different phases of the project.

Community Influencers

The CIs felt that they were given only a limited time to distribute the resources. They would have preferred a longer time to plan their approach, for example, to distribute resources at local events.

Moreover, the CIs reported that the supply and demand of the resources in different languages were mismatched. Reflecting on their Phase 1 research, the CIs (who were involved as Community Researchers) thought that the decision to supply more English guides than Urdu guides made sense in the context of the research sample, which were Pakistani females. Many Pakistani women do not read Urdu, and thus English was selected as the more common language. However, once the CIs were in public spaces, they realised that they were more likely to interact with men than women, because businesses, mosques, and community centres are more often managed by men. Pakistani men read and preferred written Urdu over English, leading to CIs not having enough Urdu guides.

Healthcare Professionals (HCP) Survey

The HCPs were asked about difficulties with using the BCC-provided resources in the context of providing culturally aware care for headaches and migraines in patients from Pakistani communities.

- Regarding the community guide and/or poster, one HCP said that ‘some patients don’t accept facts about cultural awareness and care for headaches and migraines,’ indicating some resistance toward the resource.
- Two HCPs pointed out that some patients cannot read, but that having a resource for patients to take home is helpful because their friends or families can read it to them.
- At the same time, one HCP expressed a concern that patients may take a resource home and forget about it.
- Regarding the HCP guide, one HCP had difficulties with the way the guide discusses traditional or complementary medicine, because they did not feel they had adequate training to advise on their patients on this matter.

Maintenance

The sustainability of intervention effects and continued use of project resources over time.

Community Influencers

The CIs were not confident in the long-term impact and sustainability of the current public-facing resources, due to the concerns noted above. In particular, the negative reactions from community leaders on the language and content of the resources led to the CIs feeling that there will be limited buy-in among the community. However, there were enthusiasm toward the project in the community, and resolving the possible language and/or cultural discrepancies may lead to a more sustainable, positive impact.

Be Heard Community Survey:

The survey showed that most respondents were at least somewhat likely to use the information in the future (Table 14). In addition, most respondents (13 out of 21) had already shared the information with someone they know (Table 15).

Table 14. Likelihood of Using Resource in Future.

Options	Count
Not at all	0
Very unlikely	3
Somewhat likely	8
Quite likely	4
Very likely	6

Note: The question was 'If you suffer with a headache or migraine in the future, how likely are you to use or read this information again for guidance?'

Table 15. Likelihood of Sharing Resources.

	Shared already:		
Likely to share:	Yes	No	Grand Total
Not at all	0	0	0
Very unlikely	0	1	1
Somewhat likely	0	4	4
Quite likely	0	0	0
Very likely	0	3	3
NA	13		13
Grand Total	13	8	21

Note: The questions were: 'Have you already shared the video, booklet or poster with family, friends or colleagues?' (If not) 'How likely are you to share the video, booklet or poster with your family, friends or colleagues?'

Healthcare Professionals (HCP) Survey

To ensure that the resources continue to be used and shared by HCPs when providing care to patients from Pakistani communities, the resources need to be convenient to access for

HCPs. When asked about the preferred locations through which they could access the resources, the IT system at the practice was one of the most popular options (see Table 16).

Table 16. Preferred Locations to Access Resources.

Options	Community guide/poster	HCP guide
Online search engines	3	4
Specific websites (e.g. NICE clinical guidelines, NHS England)	4	3
Located on your Practice IT systems e.g., EMIS, System One, etc.	4	5
Not applicable - the current location/format is suitable for me	2	1

Regarding their use of the resources in the future, the HCPs generally thought that the community guide/poster will support them with providing better care for their patients from Pakistani communities (5 HCPs responded that they think it will 'quite a bit'), and that they are 'quite likely' (one HCP) or 'very likely' (4 HCPs) to share it with the patients. Most also thought that other HCPs are likely to share this guide with patients (4 HCPs responded 'very likely').

Similarly, for the HCP guide, most of the HCPs thought that it will support them with providing better care (4 HCPs said 'quite a bit'), that they are likely to use it in the future (4 responded 'quite likely' and 2 responded 'very likely'), and that other HCPs are likely to share it with other professionals (2 responses 'quite likely' and 3 responded 'very likely').

Process Evaluation

This evaluation is expected to support knowledge sharing among healthcare providers in Birmingham, and act as a stepping stone for developing culturally informed care guidelines for similar public health projects. The extent to which this evaluation will have the desired impact, and whether such impact will be sustained, is yet to be seen. However, a reflection on the process of the academic evaluation is critical to uncover ways in which the evaluation could have better contributed to the overall success and learnings within this project, and in turn, inform future projects that include an evaluation. Two elements from the RE-AIM framework are relevant for this phase: Reach and Effectiveness.

Reach

Whereas the evaluation is not on its own an intervention, a community-focused approach to evaluation would ideally engage and benefit the community as well. In general, Social

Machines primarily engaged with and heard from the Project Team at BCC Public Health to obtain information about the project, such as its goals, progress, successes and challenges. While this frequent contact helped Social Machines understand the project, it also meant that the evaluation was likely influenced by the Public Health team's perspective to a greater extent, compared to the community members that worked on this project.

There may have been a missed opportunity where community members could have benefitted from research skill-building and could have influenced the evaluation to a greater degree. For example, the CRs were generally very eager to contribute to the project; with more time and resources, Social Machines could have guided and collaborated with the CRs to conduct the workshops (to design the Theory of Change), observe co-production sessions, and synthesise the findings for this evaluation.

Effectiveness

For the most part, Social Machines' research team members were able to engage with key contributors of this project, across organisations and teams: the BCC Public Health team, data analysts, BVSC and community researchers (CRs), and The Delicate Mind. Social Machines was able to collaborate with BCC Public Health, BVSC, and The Delicate Mind on developing the Theory of Change. However, there were scheduling and resource challenges that reduced the amount of direct and timely engagement with community organisations.

Prior to onboarding, Social Machines was expected to meet regularly with the CRs in Phase 1 and with the co-designer in Phase 2. However, because Phase 1 had largely concluded by the time Social Machines was contracted, regular meetings with CRs did not occur, and they were replaced by brief interviews. In Phase 2, Social Machines could only observe three co-production sessions due to difficulties establishing timely communication with The Delicate Mind on when the sessions were scheduled.

Overall, the quality and quantity of data for the current evaluation were adequate and enabled a thorough examination of the entire project. However, resource and time constraints led to some difficulties with developing a coherent evaluation strategy. Social Machines acted as an external observer, whereas much of the data collection (e.g., surveys and focus groups) were designed and conducted by other organisations: BCC Public Health, BVSC, and The Delicate Mind. Although this structure allowed Social Machines to take a somewhat neutral or impartial position and allowed the project to leverage the community networks and cultural knowledge, it also meant that the evaluator played a smaller role in determining what data feeds into the evaluation. As noted above, more collaboration with the community organisations from the start of the project may have allowed Social Machines to better plan and coordinate the evaluation.

Community-based research and interventions can take a fluid and interactive form (Cornish et al., 2023), where intervention design, execution, and evaluation are conducted in a collaborative manner, with many course-corrections along the way. Future projects can consider the scope of the evaluator's role, timing of onboarding the evaluator (e.g., at the start of the project to plan the evaluation ahead of time), and ways to establish connections

between the evaluator and project organisations (e.g., a more synchronous, collaborative approach to evaluation), to help integrate the evaluation into core project activities.

Concluding Remarks

Overall, Phase 4 involved a comprehensive and collaborative evaluation of the BCIAHP project's design, implementation, and outcomes, highlighting both its achievements and limitations. However, the evaluation also revealed key challenges that constrained its full potential, such as limited community participation in the evaluation process, delayed onboarding of the evaluator, and fragmented coordination among delivery partners. These findings underscore the importance of embedding evaluative thinking from the project's inception and positioning evaluation as a co-creative process alongside intervention design. Future initiatives of this kind would benefit from a more integrated, community-engaged evaluation model that strengthens feedback loops between community researchers, implementers, and participants, ensuring that culturally informed health interventions are not only impactful but also continuously adaptive and community-owned.

Discussion

Across its phases, this project has offered a promising model for designing, co-producing, and disseminating culturally informed health communications within the Pakistani community on headache and migraine issues in Birmingham. What stands out most clearly is the project's grounding in a participatory ethos, collaborating with community members throughout the lifecycle of the intervention. This approach not only supports more locally resonant insights but also signals a pathway toward grassroots health empowerment and continued sustainability after the end of the current BCIAHP contract. However, the process also revealed several challenges and learnings that underline the complexity of working in under-researched, socially nuanced spaces.

One tension throughout the project has been the question of what constitutes 'good data' in the context of health issues that are potentially both medically underdiagnosed and socially underreported, such as headaches and migraines. While initial phases relied on clinical data and qualitative focus groups, the findings illustrate that triangulation with broader, more varied sources is essential, particularly in contexts where data scarcity is a symptom of structural marginalisation or a lack of understanding. For instance, applying Pakistani national-level data or epidemiological assumptions to Birmingham's Pakistani population is likely to be culturally and methodologically inappropriate, given the different environmental, behavioural, and healthcare realities. The community focus on subgroups (smokers, individuals with high blood pressure, and working-aged women) would need to be continually re-validated with localised, intersectional insights.

In such contexts, 'good data' must be understood not solely in statistical terms but in community-informed terms, reflecting the realities of individuals whose healthcare experiences may be shaped by stigma, undereducation, or social silence. For instance, the predominance of female responses across data collection efforts may reflect challenges with engaging men in health issues.

These considerations highlight the ongoing need for community-driven ethnographic approaches that goes beyond standard methods by deepening local engagement, building long-term relationships with local and trusted healthcare professionals, and capturing narratives that speak not just to prevalence but to meaning that underlies the data. Qualitative, co-produced, and continually iterated data becomes a highly valuable foundation to develop a meaningful intervention in under-acknowledged health domains.

BCIAHP does a good job in the initial stages of getting this understanding, but problem diagnosis with such underrepresented issue may benefit from a longer-phased diagnostic process rather than jumping immediately into solutioning. However, given that the intervention aimed to primarily build awareness, the intervention targeted the right level of scope for the degree of evidence BCC Public Health currently has on this topic.

Recommendations

BCIAHP programme offers valuable lessons for designing, implementing, and sustaining culturally informed, community-based health interventions. The following recommendations are structured around implications for public health leadership and commissioners, system and community partners, and healthcare providers, with an emphasis on supporting future projects that employ community-centred approaches. Future projects can learn from the BCIAHP project on what worked well, along with what could be enhanced.

For Commissioning Organisations and Commissioners

1. Embed participatory approaches throughout project lifecycles

This project involved extensive collaboration and implementation of participatory approaches to health interventions. Ideally, community partners and local organisations would be engaged from the earliest stages of project design, including the co-development of project scope, strategies and materials for data collection and insights development (e.g., interview questions, sampling methods, analysis), and co-creation of intervention materials. This deepens ownership, relevance, and cultural resonance. For instance, recruitment strategies should aim to capture diversity and intersections of identities within the community, and relevant target groups and approaches to engage them should be informed by contextually specific and community-based data. In this project, the Project Team needed to adjust timelines and adapt to challenges that comes with collaborating across different organisations; future projects can consider evaluating the feasibility of collaboration and recruitment prior to the project start, and consider back-up plans.

2. Strengthen the quality assurance of culturally tailored materials

Given that building trust is critical to community-centred approaches, translation and cultural review processes must be robust and iterative. In this project, multiple rounds of quality assurance were conducted for the resources. Despite doing so, there was some critical feedback on the cultural and linguistic appropriateness of the resources, highlighting the sensitive nature of developing culturally informed interventions. Future projects can consider involving multiple reviewers across relevant languages and cultural backgrounds, and community gatekeepers or leaders to ensure accuracy, sensitivity, and alignment with the relevant community. Allocating sufficient time and resources for professional design, translation, and pilot-testing may help to enhance the credibility and authenticity of the co-produced materials.

3. Integrate evaluation as a co-creative process

In this project, an independent evaluation helped to document the activities, insights, and learnings across the project phases. However, evaluative work may provide additional

benefits by being embedded from the outset, with evaluators participating in planning and co-designing data collection. Community members themselves can be trained to support ongoing evaluation activities, promoting feedback loops that allow learning to shape delivery in real time.

For System and Community Partners

The extent to which the recommendations below can be implemented by system and community partners may depend on the commissioner; thus, the following points should be considered by both parties.

4. Build equitable and transparent partnerships

In this project, the Project Team developed collaborative relationships across community organisations, and provided flexibility to support the activities and delivery of contracts. Future collaborations involving community organisations can consider establishing shared definitions of quality, clear deliverable standards, and decision-making processes at the outset. Commissioners should prompt discussions about appropriate financial and technical support for specialised tasks (e.g., videography, translation, or accessibility design), ensuring that expectations align with each partners' capacity.

5. Expand reach and inclusion strategies

This project highlighted some challenges with engaging community members and locations, particularly in a way that captures the diversity within the community (e.g., across genders and speakers of different languages). Future projects should consider ways to engage underrepresented groups within the community, using varied outreach methods. System and community partners have an important role to play here, given their contextually specific knowledge about the community, e.g., popular locations, activities and habits across different groups, and who would be best suited to reach out to these groups.

6. Sustain capacity beyond project cycles

In this project, offering skill- and experience-building for community researchers and community influencers provided a strong foundation for developing and executing the intervention. System and community partners can proactively identify the benefits to collaborating on these kinds of projects, and retaining motivated individuals to support long-term continuity, trust, and shared learning across initiatives over time.

For Healthcare Providers and Clinicians

7. Develop and sustain cultural humility in practice

This project demonstrated a strong need to engage in the challenging task of changing the practices and norms among healthcare professionals (HCPs) when it comes to cultural awareness. However, achieving it would require ongoing and multifaceted interventions that extend beyond awareness-raising, to include practical communication tools and contextual understanding of cultural influences on health and care-seeking. Additional

efforts may be required to promote the continued use of culturally informed resources, reinforced through peer learning and practice champions.

8. Integrate resources into existing systems and workflows

Interventions targeting HCPs should blend into their existing work structures and processes. In this project, HCPs expressed a clear preference for accessing materials through their practices' IT systems. Embedding the resources into existing digital infrastructure will support their continued use. Moreover, sustainability plans should be in place to ensure a feedback channel between HCPs and the intervention provider/commissioner to identify emerging needs and improve the culturally informed resources over time.

9. Facilitate dialogue around traditional practices

Culturally informed care can include acknowledging traditional or faith-based remedies, which may be outside of many HCPs' comfort zone, if they are coming from British 'mainstream' western medical background. However, given the prevalent use of traditional and complementary treatments, primary care settings should be equipped to hold informed, respectful conversations that balance cultural understanding with clinical safety and evidence-based advice.

Cross-Cutting Implications

Future community-based health initiatives should be designed with sustainability, inclusivity, and adaptability in mind. This includes longer diagnostic and piloting periods before intervention launch, clearer planning for resource maintenance and updates, and an understanding that 'good data' encompasses not only quantitative robustness but also community validation. Embedding co-production and evaluation as parallel, iterative processes will help ensure that future culturally informed health interventions remain authentic, equitable, and effective.

Conclusion

The BCIAHP project represents a meaningful step toward addressing health inequities through community-centred approaches. By embedding community voices, co-production, and evaluation across all phases, the project demonstrated how culturally sensitive design can enhance awareness, trust, and engagement among underrepresented groups. While challenges around data quality, cultural appropriateness of intervention materials, and process coordination highlighted the complexity of cross-sector work, these challenges also offered valuable learnings for future projects. Overall, BCIAHP provides a glimpse into a promising future that fosters trusting relationships between the Council, communities, healthcare professionals, and system and community partners, ensuring that care becomes more inclusive and more effective over time.

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Appendix 1


Below is the Theory of Change that was developed at the start of the evaluation.

Inputs	Activities	Change mechanisms	Outputs	Outcomes	Link between outcomes and impact	Impact
Expertise from community researchers (BVSC)	Train community researchers (members of the Pakistani community) so that they can do the interviews, conduct interviews with members of the Pakistani community	Interviews gather first-hand information about the Pakistani community about their experiences with headaches, ensuring proper reports around their specific needs.	Interview report	Short-term: Improved understanding of needs and experiences faced by the community (e.g. barriers).	Increased understanding of experiences around headaches in the Pakistani community → increases the knowledge of the community researchers → improving research materials and approaches.	Evidence-based research and activities designed for inclusivity by BCC partners (SM, BVSC, TDM).
<ul style="list-style-type: none"> ▶ Data from Phase 1 ▶ Expertise from co-designers (The Delicate Mind) 	Facilitate focus groups and co-design workshops for creating culturally informed resources.	Focus groups and workshops foster trust and ensure the materials are relevant and culturally sensitive.	Co-designed culturally informed materials	Medium-term: Increased community engagement and improved communication with healthcare professionals.	Culturally informed materials improve awareness → behaviour changes (self-care, GP visits) → leads to better headache management and reduced disparities.	Increased confidence and healthcare-seeking behaviours.
<ul style="list-style-type: none"> ▶ Expertise from Social Machines (Academic Evaluator) ▶ Expertise from community researchers and co-designers 	Evaluate the implementation and delivery of services used to collect and process data (Phase 1 and 2)	Evaluator ensures robust methods and alignment with project goals.	Evaluation framework and Theory of Change	Short-term: Clear guidance, KPIs and metrics for measuring intervention success.	Strong evaluation framework enables tracking and refinement of interventions → provides replicable models for future public health initiatives.	Scalable guidance/model for future public health initiatives with other communities on other topics.

Appendix 2

Figure 1. Poster by BVSC summarising the community research interviews conducted in Phase 1.

Birmingham Culturally Intelligent Approach to Headache Disorder in the Pakistani Community (BCIAHP)



1. Introduction

The BCIAHP project was commissioned by Birmingham City Council's Public Health Division, and it explored the prevalence and impact of chronic headaches and migraines within Birmingham's Pakistani community. The study aimed to understand the barriers individuals face in accessing treatment, the cultural perceptions surrounding headaches, and their overall impact on daily life. The findings will contribute to developing culturally intelligent materials for both individuals and healthcare providers, promoting awareness, prevention, and improved healthcare engagement. Financial support was provided as a Quality Improvement Grant from Pfizer Limited.

2. Methodology

The BCIAHP project employed a community research approach to capture the experiences of Birmingham's Pakistani community regarding headaches and migraines. Ten community researchers were trained to conduct semi-structured interviews, ensuring culturally relevant and insightful data collection. A total of 40 participants were interviewed, focusing on three key demographic groups -

1. People who smoke
2. Individuals with high blood pressure
3. Working aged women.

3. Findings

Barriers to Treatment

Participants reported barriers to treatment, including a lack of cultural understanding in healthcare, stigma, and limited awareness of headache causes and treatments. Several participants felt that racism and discrimination within the healthcare system significantly impacted how members of the Pakistani community interacted with it, and could be related to their health issues not being taken seriously. The experience of being dismissed was particularly prominent for women, with a number of female participants raising the issue.

Cultural Factors

The interviewees pointed to several cultural factors that may contribute to headaches in the Pakistani community, including:

- Traditional gender roles and expectations, particularly those placed on women, which can lead to stress and overwork.
- Family dynamics and expectations, which can create pressure to conform and to suppress emotional needs.
- Cultural beliefs and attitudes towards health, which can encourage stoicism and discourage help-seeking behaviours.
- Dietary and lifestyle habits, which may contribute to headache triggers.
- Immigration-related stress, which can impact mental and physical well-being.

Impact

Many interviewees expressed frustration at the impact headaches had on their lives, limiting their ability to work, socialise, and fulfil family obligations.

- Physical impacts include pain, nausea, fatigue, sensitivity to light and sound, and difficulty concentrating.
- Emotional impacts include frustration, anger, irritability, anxiety, low self-esteem, shame, and guilt.
- Social impacts include isolation, withdrawal from social activities, strained relationships with family and friends, and difficulty fulfilling family obligations.
- Economic impacts can result from missed work, reduced productivity, and the cost of seeking treatment.

Treatments and Remedies

Many participants relied on home remedies such as herbal teas, meditation and acupuncture and Hijama (cupping) due to dissatisfaction with medical support, highlighting a need for more holistic and culturally sensitive care. Others turned to online groups such as TikTok to find support.


Empowerment

While access to quality healthcare is crucial, the participants also emphasised the importance of empowering individuals to take an active role in managing their headaches. This included:

- Educating themselves about headaches and migraines, including potential triggers and treatment options.
- Developing self-care strategies, such as stress management techniques, healthy lifestyle habits, and effective home remedies.
- Advocating for their own needs within the healthcare system, communicating their symptoms and preferences clearly, and seeking second opinions when necessary.
- Building a support system of family, friends, and community members who understand and validate their experiences.



4. Conclusion

The BCIAHP project highlights the significant impact of headaches and migraines on Birmingham's Pakistani community, revealing key barriers such as limited cultural awareness in healthcare, stigma, and access challenges. Participants emphasised the emotional, social, and economic burdens of chronic headaches, underscoring the need for culturally competent care. Addressing these issues requires improved healthcare communication, increased awareness, and community-driven support. Empowering individuals through education, self-management strategies, and accessible healthcare can enhance wellbeing.



“As being Asian female, we are not taken seriously.”
“I would say the stigma is a major reason why they won't go and get help.”
“I go on to TikTok to find out. People talk about lots there, and there is a large there. There are hundreds and thousands of videos about migraines on there on what you can do.”
“We're almost manipulated into believing that a headache isn't important enough to get help for.”
“I can't concentrate through my pain, I can't crochet which is one of my favourite hobbies to do. I just feel useless, and I'm frustrated”.

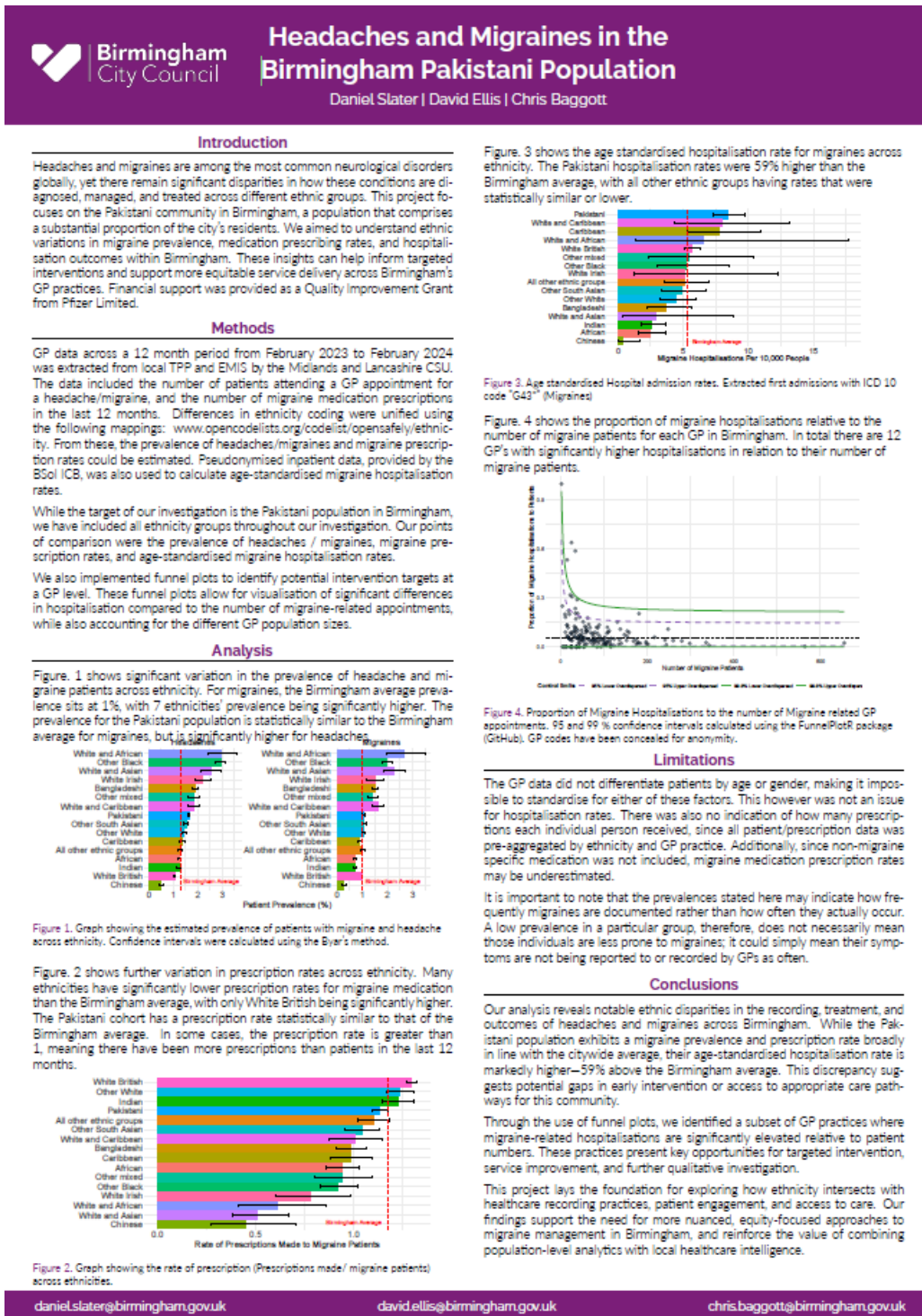
1. Introduction

Researchers: Farwa Abbas, Khalisah Aftab, Nayyara Rai, Fanniza Begum, Tyra Rehman, Henna Rasool, Sarwat Azam, Safia Sadiq, Mumtaz Alibhai

Note: [The document is available on the BVSC webpage](#)

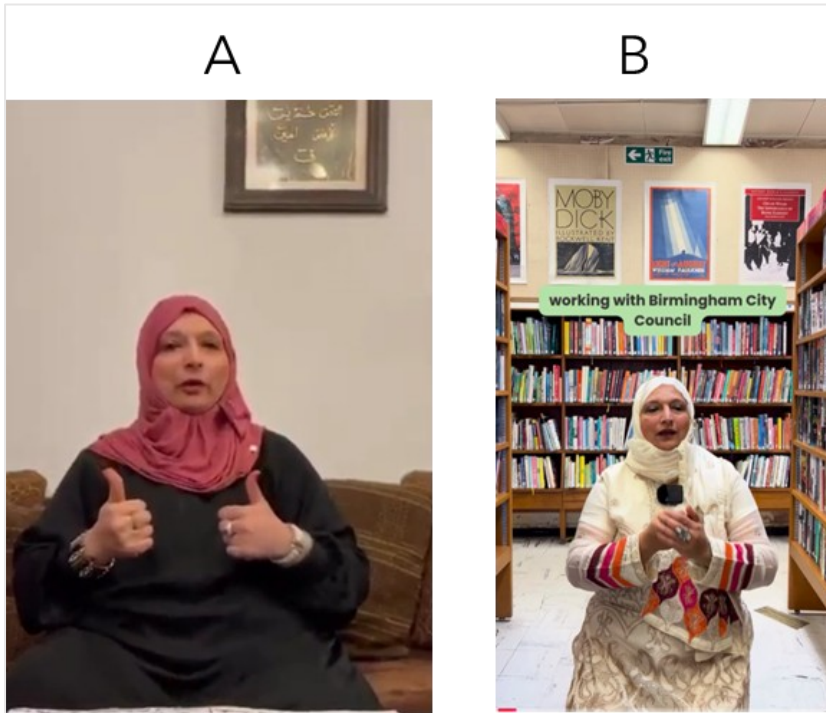
Figure 2. A screenshot of the poster summarising the quantitative clinical data analysis conducted in Phase 1.



Appendix 3

The images below are sample screenshots of the culturally informed resources that were developed in Phase 2 and disseminated in Phase 3. All of these resources can be accessed on the Birmingham City Council BCIAHP webpages.

Figure 3. Original video (A) and re-filmed video that was disseminated (B).



Note: [English version of the video is available on YouTube.](#)

Note: [Urdu version of the video is available on YouTube.](#)

Figure 4. Original guide in English.




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Figure 5. Original guide in Urdu.



فہرستِ مضامین	
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Figure 6. Re-produced guide in English that was disseminated.



The cover features a green background with a blurred image of a person's head. The text reads: "Community Guide", "A guide to understanding and managing headaches", and "for Pakistani communities." Logos for "The Federation" and "Birmingham City Council" are at the bottom.

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Disclaimers: The information within this guide is correct as of the time of its publication. Always seek the advice of a healthcare professional.

Certain sections of this guide explore the connections between chronic headaches & migraines and religious beliefs. This guide is not limited to those who practice a religion, it is designed for anyone who identifies as belonging to Pakistani communities.

A Community Guide to Headaches | July 2025.

Figure 7. Re-produced guide in Urdu that was disseminated.




Note: The document was available in print but not online at the time of writing this report.

Figure 8. Poster in English that was disseminated.


It's not just nazar.


Headaches and migraines are important health issues.


These are real medical issues that often affect Pakistani communities.




Migraines can cause:



Severe throbbing pain (often one side).



Nausea or vomiting.



Sensitivity to light or sound.



Vision Problems.

Other types of headaches can feel like:



They can last hours or even days.



Tight pressure or band around the head.



Pain behind eyes or face.



Pressure at the back of the head.

What you should do:



Drink water.



Rest properly.



Reduce stress.



Talk to your GP if worried.

Things to avoid:



Too much alcohol or caffeine.



Skipping meals.



Straining your eyes e.g. screens.



Ignoring severe or new symptoms.


Visiting your GP? Be ready to tell them:


Where it hurts.



When it happens.


What Symptoms?


What medication do you take (if any)?


Write it down before your appointment.

For clear, trusted advice
made with **Pakistani communities** and **healthcare professionals:**



Scan the QR code or visit:
birmingham.gov.uk/BCIAHP

This information is part of a Birmingham Public Health project.
Financial support was provided as a Quality Improvement Grant from Pfizer Limited.

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OFFICIAL



Figure 9. Poster in Urdu that was disseminated.

یہ صرف نظر کا لگنا ہی نہیں۔
سر کا درد اور دردِ شقیقہ صحت کے لیے تشویشناک ہیں۔
 یہ حقیقی طبی مسائل ہیں جو کہ پاکستانی کمیونٹی کو اکثر متاثر کرتے ہیں۔

سر کے دیگر اقسام کے درد اس طرح محسوس ہو سکتے ہیں:

- سر کے پچھلے حصے میں دباؤ
- آنکھوں یا چہرے کے پچھلے درد
- سر کے ارد گرد سخت دباؤ یا پرجوش
- یہ گینان گھنٹوں یا دنوں تک جاری ہو سکتے ہیں۔
- بیٹائی کے مسائل
- روشنی یا آواز کے بارے میں حساسیت
- جیسا تھایا ہے آنا
- شہوت کا نہیں مارنے والا درد (اکثر اوقات سر کے ایک طرف)

دردِ شقیقہ ذیل کا سبب بن سکتا ہے:

- شہوت کا نہیں مارنے والا درد
- جیسا تھایا ہے آنا
- شہوت کا نہیں مارنے والا درد
- جیسا تھایا ہے آنا

آپ کو کیا کرنا چاہیے:

- شہید یا طبی علامات کو نظر انداز کرنا
- اپنی آنکھوں کو دباؤ یا انہماک کے طور پر بہت دیر تک اسکرین کو دیکھنا
- کھانا پھوڑنا
- بہت زیادہ الکحل یا کھینک کا استعمال کرنا
- اگر یہ بیان ہوں تو آپ نے جیانی سے بات کریں
- تناؤ کو کم کریں
- مناسب آرام کریں
- پانی پیئیں

اپنے جی پی کے پاس جائیں؟ انہیں بتانے کے لیے تیار رہیں:

پاکستانی کمیونٹی اور ہیلتھ کیئر پروفیشنلز کی طرف سے واضح اور قابل بھروسہ مشورے کے لیے:

اپنی پاکستان سے فہم اس کو لکھیں۔ اس سے مدد ملتی ہے!

آپ کو کئی دوائی لیتے لگتی ہیں (اگر کوئی ہے)

دیگر علامات (جسکی ہونا چاہیے)

یہ کب ہو سکتا ہے

جہاں پر درد ہو سکتا ہے

یہ معلومات برصغیر ہیک ہیلتھ ویجٹ کا حصہ ہیں۔ ہائر لیول کی طرف سے کوئی بھی ہمدردی کے طور پر فراہم کردہ مالی معاونت۔

birmingham.gov.uk/BCIAHP

Figure 10. Guide in English that was disseminated.



Appendix 4

Below is a list of the team members who Social Machines worked for this project:

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Ellie Jaroszek

Helen Harrison

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