

Screening for diabetes and cardiovascular disease outcomes in people of South Asian ethnicity in Bolton

Lynne Bromley, Harnovdeep Singh Bharaj

Ethnicity is a well-established predisposing risk factor for the development of type 2 diabetes, and its prevalence is considerably higher among those of South Asian, African and African–Caribbean descent. The aim of this study was to improve awareness and self-management of diabetes and cardiovascular disease in a small population of people of South Asian ethnicity in Bolton, Greater Manchester. Screening, education and awareness sessions were carried out, using point-of-care testing, with the aim of improving diabetes awareness and patient engagement with health services, in partnership with the Bolton Council of Mosques.

Globally, ethnicity is a well-established predisposing risk factor for the development of type 2 diabetes, and its prevalence is considerably higher among those of South Asian, African and African–Caribbean descent than those of European descent (World Health Organization, 2014). South Asian and African–Caribbean ethnicities have an increased genetic predisposition to type 2 diabetes and increased susceptibility to environmental factors, which can lead to diabetes being diagnosed at a younger age than those of European ethnicities and lead to a higher risk of developing diabetes-associated complications (Riste et al, 2001; Forouhi et al, 2006).

Middle-aged, British people of South Asian and African–Caribbean descent have an increased risk of developing type 2 diabetes compared with Europeans of the same BMI or waist circumference (Tillin et al, 2015): diabetes is up to six times more common in people of South Asian descent and up to three times more common among those of African and African–Caribbean origin (Department of Health, 2001). Evidence suggests that over 50% of type 2 diabetes in developed countries is undiagnosed (Forouhi et al, 2006). In South Asian populations, it is reported that there is a lower perceived knowledge of diabetes, lower awareness of diabetic complications and lower

awareness of nutrition (Pardhan and Mahomed, 2004), which is thought to be complicated by a range of cultural, socio-economic and language barriers (Patel, 2015). According to Patel (2015), only 25% of people of South Asian ethnicity are aware that type 2 diabetes can lead to other health complications. Further research suggests that for some people of South Asian ethnicity with diabetes, keeping clinical appointments and maintaining glucose control was of low importance (Pardhan and Mahomed, 2004).

The *Diabetic Retinopathy Screening: Health Equity Audit* (Cook et al, 2014) reported the prevalence of diabetes in the Asian Indian and Asian Pakistani populations of Bolton, Greater Manchester, is 19.6% and 27.0% respectively. The *National Diabetes Audit 2011–12* (The Health and Social Care Information Centre, 2013) also reported that the incidence of diabetes-related complications in Bolton is higher than the national average for all measures. The most frequent complication in people with diabetes in Bolton was angina (with cardiac failure, myocardial infarction, stroke, ketoacidosis and renal failure also reported complications). However, despite having a significantly higher prevalence of diabetes and a higher rate of complications, black and minority ethnic groups in Bolton are less likely

Citation: Bromley L, Bharaj HS (2016) Screening for diabetes and cardiovascular disease outcomes in people of South Asian ethnicity in Bolton. *Diabetes & Primary Care* 18: 279–82

Article points

1. People of South Asian ethnicity are at increased risk of developing diabetes.
2. Screening with point-of-care testing followed by an educational intervention can improve diabetes awareness.
3. Healthcare professionals can work together with community leaders to engage and improve diabetes awareness in hard-to-reach populations.

Key words

- Community engagement
- Education
- Point-of-care test
- South Asian community

Authors

Lynne Bromley, Queen's Nurse and Specialist Practitioner, Mandalay Medical Centre, Bolton; Harnovdeep Singh Bharaj, Consultant in Diabetes and General Medicine, Bolton NHS Foundation Trust, Bolton, and Leadership Fellow, The Health Foundation.

Page points

1. One way in which diabetes awareness and engagement in health care services can be improved is through the initiation of community health champion schemes.
2. The aims of this project were to provide a screening service for people of South Asian ethnicity for diabetes and cardiovascular disease (CVD), and to identify community champions for diabetes and improve engagement of the South Asian community with GPs in order to help reduce long-term morbidity and mortality.
3. Following the collection of demographic data at the screening, individuals were risk-assessed and stratified based on their risk of diabetes and CVD.

to visit their GP than people of European descent (Bolton's HealthMatters, 2013).

One way in which diabetes awareness and engagement in health care services can be improved is through the initiation of community health champion schemes, which have been developed in Yorkshire and the Humber (Woodall et al, 2013; NICE, 2016). Community champions are lay public health workers who are empowered to promote health in their community by offering a variety of activities to improve health awareness and encourage a healthy lifestyle (Woodall et al, 2013). The idea is that they can help to engage people in hard-to-reach populations alongside local healthcare services in an attempt to increase disease awareness.

The project

This article describes a project in Bolton that provided a screening service for diabetes and cardiovascular disease (CVD). Further aims were to identify community champions for diabetes and improve engagement of the South Asian community with GPs in order to help reduce long-term morbidity and mortality. This was through connections with community leaders from the Bolton Council of Mosques (BCoM) and local imams.

Screening sessions

The screening sessions comprised face-to-face consultations with a nurse or a student doctor or both. Age, sex, smoking status, HbA_{1c}, HDL-cholesterol, LDL-cholesterol, total cholesterol, blood pressure (BP) and waist measurement data were collected during the screening. Measurements of HbA_{1c} and lipids were completed during the screening session using the Alere Afinion™ point-of-care test. The test uses a small blood sample obtained via a finger prick and provides an HbA_{1c} result within 3 minutes and a lipid profile result within 8 minutes. Screening data sheets also included a question asking the participant if they were interested in receiving training to become a "community champion" of the programme.

Signed consent was obtained from each participant during the session to give permission for their data to be shared among healthcare professionals and for them to be contacted at a later date. Completed data sheets were forwarded to their GPs, and participants were followed up at 1 month and 3 months' post-

screening to check their attendance at the GP clinic.

To publicise and raise awareness of the screening sessions, advertisements were placed in the BCoM newsletter and website, in local GP surgeries and pharmacies, local newspaper, local radio and various social media outlets. Adverts for the role of community champion were also included in the local media, the BCoM newsletter and website, GP surgeries, by word of mouth at screening sessions and subsequent patient reviews. Ethics committee approval was not sought for the project.

Patient stratification

Following the collection of demographic data at the screening, individuals were risk-assessed and stratified based on their risk of diabetes and CVD. Their risk of CVD was predicted using the QRISK®2-2015 predictive algorithm, which is a validated instrument for assessing CVD risk (Collins and Altman, 2010). Patients were stratified into four groups based on their diabetes and CVD risk:

1. Low risk of diabetes/CVD.
2. High risk (those with pre-diabetes/CVD).
3. Higher risk (those with a new diagnosis of diabetes/CVD on the day).
4. Pre-existing diabetes/CVD.

On the same day as the screening, all participants received a brief and targeted educational intervention from a diabetes consultant or GP, along with instructions to see their own GP if necessary. Participants were also given a coloured card with advice according to their respective risk group (Figure 1). A dietetic practitioner was available at the sessions to discuss food choices and lifestyle changes and provide healthy eating information.

Results

Two screening sessions were delivered, one in North Bolton and one in South Bolton, 1 week apart in April 2015. A total of 104 people were screened from both of the sessions: 36 in North Bolton and 68 in South Bolton. Over half the population were male (62%), and the mean age of the participants was 50.3 years (range 18–92 years). The average BP was 134.7/82.1 mmHg and the average HbA_{1c} was 43.5 mmol/mol. Mean LDL cholesterol was 2.7 mmol/L, mean HDL was 1.3 mmol/L and mean total cholesterol was 4.9 mmol/L. The mean waist



Figure 1. Example of coloured cards given to participants after screening.

measurement for those screened was 38.3 inches (97 cm) and 7% were smokers.

At the North Bolton screening, four individuals were given a new diagnosis of diabetes on the day of screening (HbA_{1c} of ≥ 48 mmol/mol [6.5%; according to American Diabetes Association, 2016]). Thirteen were identified as having pre-diabetes and being at high risk of diabetes (HbA_{1c} 39–47 mmol/mol [5.7–6.5%]; ADA, 2016). Of the remainder, 10 were at low risk and nine had pre-existing diabetes. At the South Bolton screening, there were no new diagnoses of diabetes, but 29 participants were identified as having pre-diabetes. There were 28 people who were at low risk, and there were 11 people with pre-existing diabetes.

From both sessions, 43 individuals were identified as being at high risk of CVD according to the QRISK[®]2-2015 algorithm. Of these, 37 had an HbA_{1c} of 39–47 mmol/mol (5.7–6.5%), while the remainder ($n=6$) had an HbA_{1c} of ≥ 48 mmol/mol (6.5%) and were classified as having diabetes (ADA, 2016).

From both of the sessions, 19 individuals were identified as potential champions for the programme and were willing to undergo training.

Post-screening patient follow-up

Following the screening visit and the targeted educational intervention, 42% ($n=44$) of those screened had subsequently contacted their GP, 17% ($n=18$) gave reasons for non-attendance, and the

remaining 40% ($n=42$) were lost to follow-up as they could not be contacted or information could not be obtained from their GP. Of those who gave reasons for non-attendance, the most commonly cited reasons were a lack of time to visit their GP or not understanding the need to see their GP. Of the four individuals who were given a new diagnosis of diabetes, two made appointments with their GPs and were followed up, while the other two participants reported at follow-up that they had been too busy to contact their GP following the session and had no plans to do so in the near future.

Discussion

Despite an existing NHS Health Check programme, which includes diabetes screening, the sessions conducted in Bolton identified a number of at-risk individuals in a South Asian population in Bolton. The availability of the point-of-care test screening was highly valuable and essential to identify those at risk, as it allowed patients to be assessed in one single consultation, rather than requiring standard laboratory tests that would need a week to analyse.

However, it was disappointing that less than half of participants contacted their GP following the screening visit and targeted educational intervention. This is reflected in data that indicate that less than a fifth of people with diagnosed type 1 diabetes and less than a third of people with diagnosed type 2 diabetes receive the eight care processes recommended by NICE for the management of diabetes (The Health

Page points

1. From both sessions, 43 individuals were identified as being at high risk of cardiovascular disease according to the QRISK[®]2-2015 algorithm.
2. Despite an existing NHS Health Check programme, which includes diabetes screening, the sessions conducted in Bolton identified a number of at-risk individuals in a South Asian population in Bolton.
3. Less than half of participants contacted their GP following the screening visit and targeted educational intervention.

“The screening project, using point-of-care testing, was able to identify a number of individuals with undiagnosed pre-diabetes, type 2 diabetes and cardiovascular disease in a small cohort of South Asian people in Bolton.”

and Social Care Information Centre, 2013; Bolton’s HealthMatters, 2013).

This project aimed to increase diabetes awareness and encourage engagement with health services by collaborating with community leaders from the BCoM. Partnership between healthcare professionals and the BCoM succeeded in raising awareness and engaging this small population in Bolton. This study showed that a committed multidisciplinary team of primary and secondary care clinicians and community group leaders can work together to provide an innovative approach to engage a hard-to-reach population.

The project has since received a donation of £50 000 from a philanthropist and support from Diabetes UK, in order to develop a champion training programme for people of South Asian ethnicity in Bolton. At present, the University of Bolton provides high-quality training facilities for potential health champions, and training is led by a diabetes consultant and a Diabetes UK Engaging Communities Manager. Medical students from the university also contribute to the programme, which, in turn, improves their understanding and knowledge of the specific needs of at-risk patient groups in Bolton. The health champions are expected to attend local events organised by Diabetes UK to encourage at-risk people to manage their health and visit their GP regularly or attend regular monitoring sessions. The goal is to incorporate these individuals into local services, such as neighbourhood teams, and for them to work alongside health trainers in the community to continue improving health awareness and access to health screening services in this hard-to-reach population. The future intention is for health champions to be assigned to specific practices to support people diagnosed with pre-diabetes or diabetes, with health awareness and diabetes management, and generate links with the medical team. A partnership has also been established with the Royal Bolton NHS Foundation Trust to identify ongoing investment for the training programme and to help integrate champions into local services. Bolton NHS Clinical Commissioning Group have also expressed interest and requested to be kept informed of the progress of the programme.

We aim to continue liaising with staff at the BCoM in order to develop connections with the local mosque and interfaith leaders to promote

awareness of type 2 diabetes. Furthermore, with the additional support from Diabetes UK, recruitment and training of potential community champions can continue. The plan is to extend the training to include all ethnic minority groups, as well as the white working-class population in whom diabetes outcomes are poor.

Conclusion

The prevalence of type 2 diabetes is expected to continue rising, especially among people of South Asian ethnicity, so ensuring that they, and other hard-to-reach groups, regularly access health services is of high importance. This screening project, using point-of-care testing, was able to identify a number of individuals with undiagnosed pre-diabetes, diabetes and CVD in a small cohort of the South Asian population in two areas of Bolton. The project showed that a committed multidisciplinary team of healthcare professionals and community group leaders can work together to help identify and engage hard-to-reach populations. However further work is needed to encourage those diagnosed to seek GP follow up. Furthermore, local interest in the role of community champions, alongside additional funding for the project, could help to further improve disease awareness and engagement behaviour within the community. Work is currently underway following the results from the project, with a report on the latest updates planned for next year. ■

American Diabetes Association (2016) *Diabetes Care* **39**(Suppl 1): S13–S22

Bolton’s HealthMatters (2013) *JSNA: Diabetes*. NHS Bolton and Bolton Council, Bolton. Available at: <http://www.boltonshhealthmatters.org/content/diabetes-jsna> (accessed 02.11.16)

Collins GS, Altman DG (2010) *BMJ* **340**: c2442

Cook M et al (2014) *Diabetic Retinopathy Screening: Health Equity Audit. Bolton GP registered patients, March 2014*. NHS Bolton and Bolton Council, Bolton. Available at: <http://bit.ly/1OBcRSO> (accessed 08.11.16)

Department of Health (2001) *National Service Framework for Diabetes: Standards*. Department of Health, London. Forouhi NG et al (2006) *Diabet Med* **23**: 189–97

NICE (2016) *Community engagement: improving health and wellbeing and reducing health inequalities*. NICE, London.

Pardhan S, Mahomed I (2004) *Eye* **18**: 509–13

Patel N (2015) *Journal of Diabetes Nursing* **19**: 10–1

Riste L et al (2001) *Diabetes Care* **24**: 1377–83

The Health and Social Care Information Centre (2013) *National Diabetes Audit 2011–2012: Report 1: Care Processes and Treatment Targets. Produced by the Health and Social Care Information Centre*. NHS Digital, London. Available at: <http://bit.ly/2dYSbYp> (accessed 02.11.16)

Tillin T et al (2015) *Diabet Med* **32**: 226–34

Woodall J et al (2013) *Perspect Pub Health* **133**: 96–103

World Health Organization (2014) *Global Status Report on Non-Communicable Diseases*. WHO, Geneva, Switzerland