



King's Research Portal

DOI:

[10.1111/dme.13000](https://doi.org/10.1111/dme.13000)

Document Version

Early version, also known as pre-print

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Zeh, P., Sandhu, H. K., Cannaby, A. M., Warwick, J., & Sturt, J. A. (2016). Exploring culturally competent primary care diabetes services: a single-city survey. *Diabetic Medicine*, 33(6), 786-793.
<https://doi.org/10.1111/dme.13000>

Citing this paper

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Original article title

Exploring culturally competent primary care diabetes services: A single city survey

Running title

Delivering diabetes care to ethnic minority populations

P Zeh¹, HK Sandhu¹, AM Cannaby², J Warwick¹ & JA Sturt³

1. Warwick Medical School, University of Warwick, Coventry, UK
2. Hamad Medical Corporation, Doha, Qatar
3. Florence Nightingale Faculty of Nursing and Midwifery, King's College, London, UK

Corresponding author

Dr Peter Zeh

Email: P.Zeh@warwick.ac.uk

Word count: Abstract 234, text excluding declarations/tables/figures 2,972

Funding sources: This study was funded by NHS West Midlands through a research fellowship.

Conflicts of interest disclosures: All authors have no completing interests to declare.

Novelty from this survey

- Ninety-four percent of general practices numerically reported the ethnicity of their populations, which compares favourably with previous surveys
- One in three people with diabetes was from an ethnic minority group compared with one in ten of Coventry's population
- Seven of the eight cultural barriers for effective diabetes care and management identified in the literature were present in the city
- Fifty-six percent of the responding general practices provided highly culturally-competent diabetes services to their patients.

ABSTRACT

Aims: To determine the cultural competence of diabetes services delivered to ethnic minority populations in a multicultural UK city with 4.3% diabetes prevalence.

Methods: A semi-structured survey comprising 35 questions, was carried out across all 66 General Practices in Coventry between November 2011 and January 2012. Data were analysed using descriptive statistics. The cultural competence of diabetes services reported in the survey was assessed using the Culturally-Competent Assessment Tool (CCAT).

Results: Thirty-four practices (52%) responded. Six important findings emerged across the practices that responded: (1) 94% of general practices reported the ethnicity of their populations. (2) One in three people with diabetes was from an ethnic minority group. (3) Nine (26.5%) practices reported between 55%-96% diabetes prevalence in ethnic minority groups. (4) Cultural competence of diabetes services were assessed using CCAT; 56% of practices were found to be highly culturally-competent and 26% moderately culturally-competent. (5) Ten practices (29%) reported higher proportionate attendance of diabetes annual checks in the majority white British population compared to ethnic minority groups. (6) Cultural diversity in relation to language and strong cultural traditions around food were most commonly reported as barriers to culturally-competent service delivery.

Conclusions: Seven of the eight cultural barriers identified in the global evidence were present in the city. Use of the CCAT to assess existing service provision and the good baseline recording of ethnicity provide a sound basis for commissioning culturally-competent interventions in the future.

Introduction

Diabetes prevalence is particularly high among ethnic minority groups (population groups with an ethnic origin different from that of the majority population of the host country) nationally, presenting substantial challenges to the individual and society. One UK study reported prevalence rates of 11%-20% in South Asians and 15% in African-Caribbean, compared to 1%-5% in white Europeans (1). Evidence suggests cultural barriers to optimum healthcare for ethnic minority groups, primarily due to insufficient cultural competences amongst National Health Service (NHS) staff (2-4). The importance of cultural competences in promoting effective provider-patient relationships and optimising healthcare provision to ethnic minority groups is well known (4, 5, 6).

Coventry is a medium sized industrial and ethnically-diverse UK city, which has areas of affluence alongside pockets of severe deprivation and health inequalities. One in 10 of its population is of ethnic minority origins (7), many of which live in socially deprived areas with high illiteracy levels (8). Poor literacy is known to impede access to diabetes care (8), resulting in poor levels of disease self-management, outpatient/education attendance, glucose control and low medication concordance (9).

In April 2011, when this study was undertaken, Coventry had 66 general practices [currently 63] (9), of which 14 were single-handed practices. These were providing health care to 361,893 registered people, of whom 15,670 (4.3%) live with diabetes. The city's diabetes diagnosed cases have since risen to 4.9% (18,318) (9). People of African-Caribbean and South Asian origins living in Coventry are three and six times respectively more likely than white British to develop type 2 diabetes and tend to develop the disease at younger ages (7, 10). The prevalence of diabetes and hypertension in Coventry is believed to be underreported due to under-screening (10). Adherence to National Institute for Health and Care Excellence (NICE) clinical guideline 66 (11) is difficult to assess, owing in part to ineffective systems and care pathways (10).

The need for inner city Coventry GP practices to record patient ethnicity in order to inform commissioning of culturally-competent diabetes interventions has been reported previously (3), further strengthened by systematic reviews (12, 13). A culturally-competent health care system is defined as one that acknowledges and incorporates at all levels the importance of culture, assessment of cross-cultural relations, awareness of the dynamics that result from cultural differences, development of cultural knowledge, and tailoring services to meet individual cultural needs (14). Culturally-competent interventions for improving access to health care and diabetes outcomes should be structured, encompassing language, culture, religion, and health literacy skills and tailored to the individual minority population (13). Such an intervention has been shown to be successful at improving diabetes-related-health outcome measures in both Hispanics and African-Americans (15). At an earlier stage in this project, a culturally-competent assessment tool [CCAT] (13) was developed to assess interventions for this purpose. The aim of this study was to examine the cultural competence of diabetes services delivered to ethnic minorities in a multicultural UK city. This aim was underpinned by the following research questions (Table 1).

This paper focuses on research questions 1-4 and 8. The remaining three will be reported subsequently.

Table 1: Research questions

RESEARCH METHODS AND DESIGN

Survey design

We used a structured survey comprising mostly closed questions with some free text areas (Online Table S1), which was informed by two systematic reviews (12, 13), survey design methods (16, 17), and a 25 questions pilot General Practice Survey (3). The Warwick Diabetes Research & Education User Group, (lay experienced people with diabetes), was consulted about the question content. The study received full ethical approval.

Population and data collection

All general practices in Coventry (n=66) were invited to participate. A hard copy of the survey was sent to each practice manager and the senior GP of each practice, followed by an electronic copy via email, three days later, with instructions on how to complete the survey using a third method, online SurveyMonkey (cloud based software for capturing responses). A second mail was posted to non-responding practices after 4 weeks. Non-respondents received two telephone follow-up calls after the fourth and eighth week of the initial survey mailings. A £40 incentive was offered to each practice for every completed survey received within eight weeks and £25 for surveys received between 8 and 12 weeks. A 'thank you letter' was sent to all participants.

Data analysis

All survey data were transcribed into the SurveyMonkey database and then imported into Microsoft Excel software. Descriptive statistical analyses were carried out using Microsoft Excel and SPSS v19. Surveys with more than 85% (n>29) of questions completed were included in the analysis and those returned after the deadline of three months were rejected. The 10-item Culturally-Competent Assessment Tool (CCAT) (Zeh et al., 2012) was used to assess the cultural competence of diabetes services described within the survey. Analysis of the free text data used a thematic constant comparative method. Our research questions (1-4, 8) directly informed our analysis of the survey data.

RESULTS

Response rate

Thirty-four (52%) practices returned their survey; 7 online, 6 email/fax and 21 by post and are included in the analysis. Seventeen of the 32 practices that did not return their survey gave reasons

for non-completion, which were mostly low staffing level/staff illness and related practice pressures. One practice refused the incentive payment stating that *'the survey was an eye-opener to review their internal practice.'*

Characteristics of participating general practices

There was little difference in diabetes prevalence, practice size and the number of GPs between the participating and non-participating practices (9). Fig. 1 shows the characteristics of the 34 participating practices. The highest diabetes prevalence was 10% reported by Practice (P) 10. Four practices did not know the number of ethnic minorities with diabetes and consequently reported fewer culturally-competent diabetes services ($n < 3$). One (P4) of the six single-handed practices had a patient population of 696, two (P15, P29) had less than 1,500, another two (P8, P23) had less than 2,000, and one (P33) had 2,500 patients.

Fig. 1: Characteristics of participating practices

Diabetes prevalence by ethnicity

Participating practices represented 209,149 (57.8%) of the total registered patients (361,893) in all 66 practices in Coventry, of which 8,789 (4.20%) people had diabetes. Thirty-two of the 34 practices (94%) reported recording the ethnicity of their populations, of which 30 (88%) gave information on the number of ethnic minorities with diabetes. Two thousand five hundred fifty-one of the people with diabetes (29%) were ethnic minorities; of which 163 (6.4%) had type 1 diabetes, 2069 (81.1%) type 2 diabetes (including 1,043 Indian, 405 Pakistani, 120 Bangladeshi and 264 African Caribbean), forty-five (1.8%) had gestational diabetes, and 274 (10.8%) diabetes of unknown type. Diabetes prevalence in participating practices varied from 0.24% to 10%. No practice stated having no minority people with diabetes. Nine (26.5%) [Fig. 2] reported having more than 50% of their diabetes patients as being from ethnic minorities, the highest proportion being 96% at P2. Two practices (P16, P20) did not give details of the ethnicity of their ethnic

minority people with diabetes, another two (P12, P26) reported having no minority people with diabetes, and 6 practices had between 3-33 (3.5%-38.1%) of minority people with diabetes. The median number of minority people with diabetes in the 34 practices was 43.5 (IQR=78) compared with 165.5 (IQR=241) majority white British. That is, for every 3 people with diabetes living in Coventry, one was from an ethnic minority group.

Fig. 2: Comparison of the relative proportions of diabetes in minority and majority groups

Culturally-competent diabetes services provision

Of the 34 participating practices, one reported having no culturally-competent services with appropriate language, 33 reported at least one culturally-competent diabetes service (25 provided three services, 5 provided two services, and 3 delivered one service). Fig. 3 shows the eight culturally-competent diabetes services in an appropriate language considered in our survey, with 1-1 nurse-patient services the most commonly provided (n=26) and the multilingual South Asian link worker model least common (n=2). Two practices reported dietary advice and retinal photography as other diabetes services delivered using patient's primary language.

Fig. 3: Culturally-competent diabetes service provision in appropriate language

Eighteen practices (53%) offered educational resources specifically for ethnic minorities with diabetes and sixteen (47%) were aware of locally-available resources for these people.

Eleven (32%) practices stated they would consider running new practice or locality-based services in order to ease cultural barriers. A further four (12%) said that they would only consider running a new practice-based diabetes service and another six (18%) reported that they would prioritise

collaborating with other local practices to offer new locality-based diabetes services explicitly to ethnic minorities.

Barriers to culturally-competent service delivery and utilisation of diabetes annual checks

Cultural and organisational barriers were identified as contributory factors to the delivery of diabetes care services. Only five practices reported experiencing no cultural issues (Table 2) in their day-to-day interactions with minority populations with diabetes. Of the remaining 29 practices, the majority (21/29) reported 3 areas of concern (the maximum allowed in our survey); language (n=15), strong cultural traditions around food (n=19) and patient/provider cultural differences (n=20) being the most common cultural barriers.

Organisational barriers included lack of funding, inadequate cultural competence training and low staffing levels. Some practices stated that they would need additional funding (n=21), training (n=23) and staff (n=21) to implement better culturally-competent services. Two practices, which had one and five minority people with diabetes respectively, stated there was no need for specific services for minority patients within their practice as they were neither viable nor cost-effective, while one practice stated the lack of time and space as reasons for non-implementation. Four of the six (67%) single-GP practices were unaware of locally available resources for minority people with diabetes. Twenty-one (61%) practices reported staff understanding of the different patients' cultural beliefs surrounding diabetes care services, 5 (15%) reported inadequate understanding of these beliefs and 8 (24%) were unsure.

The did-not-attend (DNA) rates of people with diabetes reported by practices were generally lower in the majority white British population than in the ethnic minority groups (Fig. S1). DNA rates of less than 25% were reported for the majority population at 26 (76%) practices and for ethnic

minority groups at 21 (62%) practices. Six (18%) practices had DNA rates between 25%-50% for the majority population compared to 11 (32%) for the ethnic minority groups.

Table 2: Barriers impeding delivery of culturally-competent diabetes services

Level of cultural competences within GP practices

General practices reported data representing 517 practice staff across the city, of whom 164 could speak a second language relevant to the practice's minority population. Assessment of the cultural competence of diabetes services within each of the participating practices using CCAT (Table S2) found 19 (56%) practices to be highly culturally-competent (scoring 90%-100%) and 9 (26%) moderately culturally-competent (70%-89%). The remaining 18% (n=6) delivered a lower number of culturally-competent diabetes services (<70%).

DISCUSSION

Statement of the principal findings

By exploring general practices' knowledge of their diabetes patients' ethnicity, assessing the cultural competence of the diabetes services they provide, their knowledge about culturally-competent diabetes services provision, and the barriers impeding this provision, this single city survey has identified similar challenges to the delivery of culturally-competent health services to those found in existing literature across international multi-ethnic populations (2, 4, 12, 13, 18). Furthermore, our studied population (diabetes prevalence of 4.2%) appears to be representative of Coventry, which has a diabetes prevalence of 4.33% (9) and may be representative of global multi ethnically-diverse cities as the first seven (see Table 2) of the eight cultural barriers identified in the published evidence for effective diabetes care and management to ethnic minorities (12) were present in Coventry. We found that a disproportionate number of people from ethnic minority groups in Coventry are affected by diabetes, as one in three people of the population with diabetes

was from an ethnic minority group, implying that special attention is required to tackle this diabetes health inequality in Coventry and potentially other inner cities.

This survey found that a large proportion of diabetes cases were type 2 diabetes. This is consistent with the literature showing over 80% prevalence of type 2 diabetes nationally in the UK and worldwide (19, 20).

We found that 94% of practices in our survey numerically reported their patients' ethnicity. This compares favourably to the NHS-Scotland document (21), which noted a paucity of ethnicity data in most diabetes registers (approximately 30% of practices and community centres recording ethnicity). Increased awareness from pro-active local dissemination of the pilot findings (3) in which ethnicity was poorly reported, may have contributed positively to changes in local practice. The good reporting found in this survey may highlight the differential patient needs according to ethnicity and is fundamental for effective commissioning of healthcare services, and should be based on patients' needs and indices of deprivation rather than patient numbers or age. Although there were reported challenges across practices, most practice staff were aware of the need to deliver tailored services to minority people with diabetes, with referrals made to different providers for services not offered at the patient's registered practice. Two practices reported the lack of viability and cost-effectiveness of implementing specific diabetes services for minority patients due to their low numbers, potentially disadvantaging these patients compared to their majority white British counterparts (22). It is important that such practices have alternative arrangements to facilitate appropriate referrals in line with good practice guidance (20, 23, 24).

Despite the provision of highly culturally-competent diabetes services (56%) in Coventry, comparisons cannot be made with other comparable cities as no such measurements have been previously used (13). Furthermore, its impact on patient outcomes is unclear from our data and

further work is required to assess how patient clinical and psychosocial issues contribute as well as patient and staff satisfaction levels (3). There was some indication that single-handed practices were working in isolation as 67% of them were unaware of other locally-available services to minority people with diabetes, suggesting that integration, sharing good practice and benchmarking of the diabetes provision may help to improve care.

As in previous studies (12, 18, 25), the most problematic areas in diabetes service provision to ethnic minorities were language barriers and knowledge of cultural traditions around food and how services could meet the populations need in this respect. However, scarcity of resources coupled with less culturally-competent providers within some practices could partly explain the reason for the variation reported in diabetes service provision as previously cited in other studies (4, 13). An understanding of cultural norms and health beliefs of South Asian people with type 2 diabetes by linguistically-competent health workers has been shown to ensure effective communication, leading to better diabetes health-related outcome-measures (26). It is imperative for education around food and dietary change to be based on the kinds of foods minority people are already accustomed to (25, 27). Such initiatives should be negotiated, affordable and culturally-sensitive, reflecting the ethnicity and social context of the individuals and in accordance with their religious beliefs to ensure concordance (12, 26).

Strengths and limitations

The characteristics and challenges we observed in Coventry (a medium sized industrial and ethnically-diverse UK city) appear typical of many developed world cities such as Bologna (Italy), Tampa (USA) and London in Ontario (Canada). The insights gained in undertaking a primary care services survey of this kind, and the demonstrable efforts of Coventry to meet the health needs of its minority populations, can signpost the way forward for many other multicultural industrial cities across the world. This was a novel health care delivery survey of a whole ethnically-diverse city

with a high interest factor, involving practices with ethnic minority groups with diabetes, a daunting and challenging area for effective commissioning of healthcare services in Coventry and nationally (3, 22). A population survey method was used to give an opportunity to all practices in the city to share good practices. The survey content was robust and based on published evidence from two systematic reviews (12, 13) and other literatures (3, 16, 17). Although our response rate of 52% is moderate, there was good publicly available information (9, 10) and reasons for non-response from seventeen of the 32 non-participating practices were provided.

The scope of this study was limited to healthcare professionals' perspectives only, and similar surveys are warranted to concurrently investigate views of different patient groups including those from ethnic minority backgrounds. Our survey also has limitations in diagnosing individual practice issues relating to barriers to delivering culturally-competent care as well as whether the diabetes rates were due to individual practices' clientele rather than the ratio of diagnoses by minority vs white British background. Furthermore, the CCAT assessments were made on self-report data and not from independent assessment or observation which mitigates against the CCAT scores (Table S2) being altered should the assessment be based on interviews or observation (involving further probing to reach a deeper understanding). In fact, the CCAT was developed in 2012 in the context of minimal UK clinical and commissioning attention to the specific health care needs of ethnic minority populations. This field has moved on (28, 29) and whilst the CCAT (13) [accompanied by 6 page guidance notes] may be perceived as having a rather simplistic approach to a complex problem, it nevertheless is of continuing value and requires further work to reflect the developing field in relation to delivering and evaluating cultural competence. Lastly, grouping all ethnic minorities together may be contentious as they may differ markedly, in terms of health patterns and the effects of culturally-competent interventions, and this in turn may also have affected interpretations.

Conclusion and recommendations for future research

The findings suggest a need to appropriately record patients' ethnicity in order to inform future commissioning of diabetes services. This would enable processes to audit health care provision for similar populations in multi-ethnic cities to be developed. To improve culturally-competent primary care diabetes services to ethnic minority groups, this survey recommends (see Box 1).

Box 1: Recommendations

FUNDING

This study was funded by NHS West Midlands through a research fellowship. However, the views expressed are those of the author (s) and not necessarily those of the funder, the NHS, or the Department of Health.

CONFLICTS OF INTERESTS

All authors have nothing to declare.

ACKNOWLEDGMENTS

We would like to thank all those who in person or online helped us to realise this study especially members of the Warwick Diabetes Research & Education User Group and NHS West Midlands Specialist Committee, who peer reviewed the study protocol; Professor Sudhesh Kumar and Professor Annie Young; Dr Neesha Patel, Dr Gulnaz Iqbal, Amanpreet Johal and Richard Dune, who provided practical guidance or directed us to possible sources of evidence; Dr Peter Barker of Coventry & Rugby clinical commissioning groups (the then NHS Coventry) who granted access to the general practices, and all the 34 general practices who freely and willingly participated in the study, despite their having limited time due to their patient demand and meeting NHS targets, their time is highly commendable. We are also grateful to the feedback received as a result of presenting this study at various meetings.

Ethics committee approval

Full Ethics approval was obtained from National Research Ethics Service (NRES) Committee West Midlands – Solihull

REFERENCE LIST

1. Baradaran H, Knill Jones R. Assessing the knowledge, attitudes and understanding of type 2 diabetes amongst ethnic groups in Glasgow, Scotland. *Practical Diabetes International*. 2004; 21(4): 143-8.
2. Hawthorne K, Mello M, Tomlinson S. Cultural and Religious influences in diabetes care in Great Britain. *Diabetic Medicine*. 1993; 10 (1): 8-12.
3. Zeh P. Delivering diabetes care to ethnic groups: a pilot general practice survey. *Diabetes and Primary Care Journal*. 2010; 12(5): 280 - 90.
4. Hawthorne, K., Robles, Y., Cannings-John, R. and Edwards, A. G. Culturally appropriate health education for type 2 diabetes in ethnic minority groups: a systematic and narrative review of randomized controlled trials. *Diabetic Medicine*; 2010; 6: 613-623.
5. Papadopoulos, I., Tilki, M. and Lees, S. Promoting cultural competence in healthcare through a research-based intervention in the UK. *Diversity in Health and Social Care*, 2004; 1 (2): 107-115.
6. Kleinman A, Benson P. Anthropology in the Clinic: The Problem of Cultural Competency and How to Fix It. *PLoS Medicine*. 2006; 3(10): e294. doi:10.1371/journal.pmed.0030294.
7. Barker C. Coventry Public Health Report. Coventry: Coventry Health Authority, 2006.
8. Bellary S, Barnett A. Novel approach to managing diabetes and CVD in South Asians. *Diabetes and Primary Care*. 2007; 9(6): 307-14.
9. Quality and Outcomes Framework [QOF]. *Diabetes Data - Quality and Outcomes Framework Management and Analysis System (QMAS)* 1st April 2011 and 1st April 2014. Coventry: NHS Coventry.
10. Grainger C. *The Coventry Time Bomb: the annual report of the director of public health 2009-2010*. Coventry: 2010.

11. NICE (2008) NICE clinical guideline 66: Type 2 diabetes: the management of type 2 diabetes. <http://www.nice.org.uk/nicemedia/pdf/cg66niceguideline.pdf>. Last accessed in September 2014.
12. Zeh P, Sandhu H, Cannaby AM & Sturt J. Cultural barriers impeding ethnic minority groups from accessing effective diabetes care services: a systematic review of observational studies. *Diversity and Equality in Health and Care*; 2014; 11: 9-33.
13. Zeh P, Sandhu HK, Cannaby AM, Sturt JA. The impact of culturally competent diabetes care interventions for improving diabetes-related outcomes in ethnic minority groups: a systematic review. *Diabetic Medicine*. 2012; 29(10): 1237-52.
14. Betancourt, JR, Green, AR, Carrillo, JE, Ananeh-Firempong, O. Defining Cultural Competence: A Practical Framework for Addressing Racial/Ethnic Disparities in Health and Health Care. *Public Health Reports*. 2003, 118: 293-302.
15. Joshi, R., Joshi, N. and Helmuth, A. (2010) Improving ambulatory diabetes care in high-risk racial minorities: use of culture-specific education and close follow-up. *Endocrine Practice*, 16 (2): 171-177.
16. Bowling A. *Research methods in health: investigating health and health services*. 3rd edn. Maidenhead: McGraw Hill/Open University Press; 2009.
17. LoBiondo-Wood G, Haber J. *Nursing research: methods and critical appraisal for evidence based practice*. 7th edn. Missouri: Mosby; 2009.
18. Fleming E, Gillibrand W. An exploration of culture, diabetes, and nursing in the South Asian community: a metasynthesis of qualitative studies. *Journal of Transcultural Nursing*. 2009; 20(2): 146-55.
19. Centers for Disease Control and Prevention. *National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2014*. Atlanta, GA: U.S. Department of Health and Human Services; 2014.

20. Diabetes UK. Diabetes: Facts and Stats - guidelines. Version 3, Diabetes UK, 2014:
<https://www.diabetes.org.uk/Documents/About%20Us/Statistics/Diabetes-key-stats-guidelines-April2014.pdf>. Last accessed in August 2015.
21. NHS-Health-Scotland. Diabetes in Minority Ethnic Groups in Scotland: A Report by the National Resource Centre for Ethnic Minority Health in collaboration with the Scottish Diabetes Group. Glasgow: NHS-Health-Scotland; 2004.
22. Roberts, S. The Way Ahead: The Local Challenge. In: Health Document, editor. London: Department of Health; 2007.
23. DH. National Service Framework for Diabetes: Standards: Health Document, editor. London: Department of Health; 2001.
24. DH. The NHS Constitution for England. In: Health Document, editor. London: Department of Health; 2010.
25. Lawton J, Ahmad N, Hanna L, Douglas M, Bains H, Hallowell N. 'We should change ourselves, but we can't': accounts of food and eating practices amongst British Pakistanis and Indians with type 2 diabetes. *Ethnicity & Health*. 2008; 13(4): 305-20.
26. Hill J. Management of diabetes in South Asian communities in the UK. *Nursing Standard*. 2006; 20(25): 57-64.
27. Goody C, Drago L. Using Cultural Competence Constructs to Understand Food Practices and Provide Diabetes Care and Education. *Diabetes Spectrum*. 2009; 22 (1): 43-7.
28. Ricci-Cabello, I., Ruiz-Pérez, I., Rojas-García, A., Pastor, G., Rodríguez-Barranco, M. and Gonçalves, D. Characteristics and effectiveness of diabetes self-management educational programs targeted to racial/ethnic minority groups: a systematic review, meta-analysis and meta-regression. *BMC Endocrine Disorders*, 2014; 14 (60): 1-13.
<http://www.biomedcentral.com/1472-6823/14/60>. Last accessed in August 2015.

29. Sidhu, M, Gale, N, Gill, P., Marshall, T. and Jolly, K. A critique of the design, implementation, and delivery of a culturally-tailored self-management education intervention: a qualitative evaluation. *BMC Health Services Research*, 2015; 15 (54): 1-11.
30. Iqbal, G., Johnson, M. R. D., Szczepura, A., Gumber, A. Wilson, S. and Dunn, J. A. Ethnicity data collection in the UK: the healthcare professional's perspective. *Diversity and Equality in Health and Care*. 2012; 9 (4): 281-290.

TABLES AND FIGURE LEGENDS

Table 1: Research questions

(1)	What is the prevalence of diabetes by ethnicity?
(2)	What is the range of culturally-competent diabetes service provision?
(3)	What are the barriers to culturally-competent service delivery and utilisation of diabetes annual checks?
(4)	What is the level of cultural competence on self-reported issues within each participating practice?
(5)	What is the profile of ethnic minority staff employed within each participating practice in relation to whole-time-equivalent posts?
(6)	What are the linguistic competencies of practice staff?
(7)	What diabetes training/knowledge is available, and accessible, for practice staff?
(8)	What are the national and international recommendations for other ethnically-diverse cities?

Table 2: Barriers impeding delivery of culturally-competent diabetes services

1.	Cultural differences between ethnic minority patients and their service providers, e.g. gender, self-denial of having diabetes based on cultural norms, diverse beliefs about physical exercises, miscommunication between patients and their service providers (n=20)
2.	Strong cultural traditions around food (n=19)
3.	Language barrier (n=15)
4.	Strong religious commitments, e.g. fasting imposing different meal times, refusing to take insulin on grounds that it's produced from pigs, curative belief of diabetes (n=7)
5.	Low concordance issues with medication due to stereotypes around western medications (n=6)
6.	Low health literacy level resulting in lack of diabetes knowledge (n=5)
7.	Belief in the expert - cultural reliance on healthcare professionals leading to low motivation in diabetes self-management (n=3)
8.	High 'did not attend' (DNA) rates in ethnic minority groups (n=3)
9.	Variation in overseas prescriptions posing non-adherence in self-medication (n=2)
10.	Prefer all clinical services at practice-based level (do not like travelling to different locations) (n=1)
11.	Patients' poor social and financial circumstances (n=1)

Box 1: Recommendations

- GP practices should collect the ethnicity data of every patient once and link through healthcare databases and verify at subsequent clinical visits (30)
- Include in the healthcare professional training curriculum the eight themes identified in the systematic review as cultural barriers impeding ethnic minority groups from accessing effective diabetes services to enhance health workers' cultural knowledge and facilitate partnership working between patients and their service providers
- General practices should measure the cultural competence of their interventions aimed at any ethnic minority population using CCAT (13). This CCAT could further be validated by general practices on independent and/or observational data aimed at any ethnic minority health care issues within their practices, which proved successful in a previous study (13) as well as the current study
- Further studies should consider the views of service-users to determine if the reported levels of culturally-competent diabetes services across most of the GP practices mirror our findings and its impact on patient important outcome measures.
- Other health providers for ethnic minority populations could modify and/or replicate the CCAT and this survey method to undertake their own service audits.

Fig. 1: Characteristics of participating general practices (n=34)

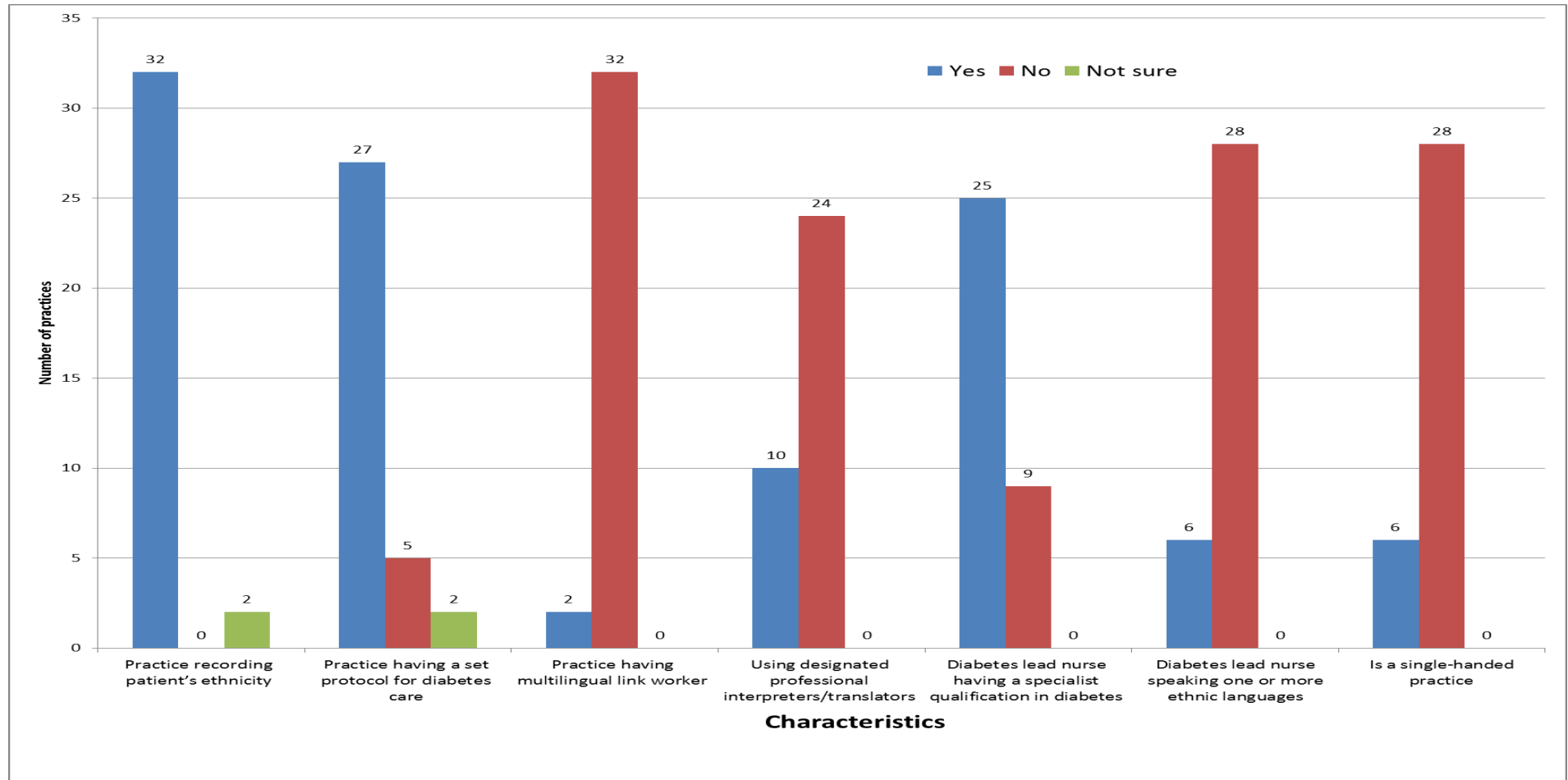


Fig. 2: Comparison of the relative proportions of diabetes in ethnic minority and ethnic majority groups in each GP practice

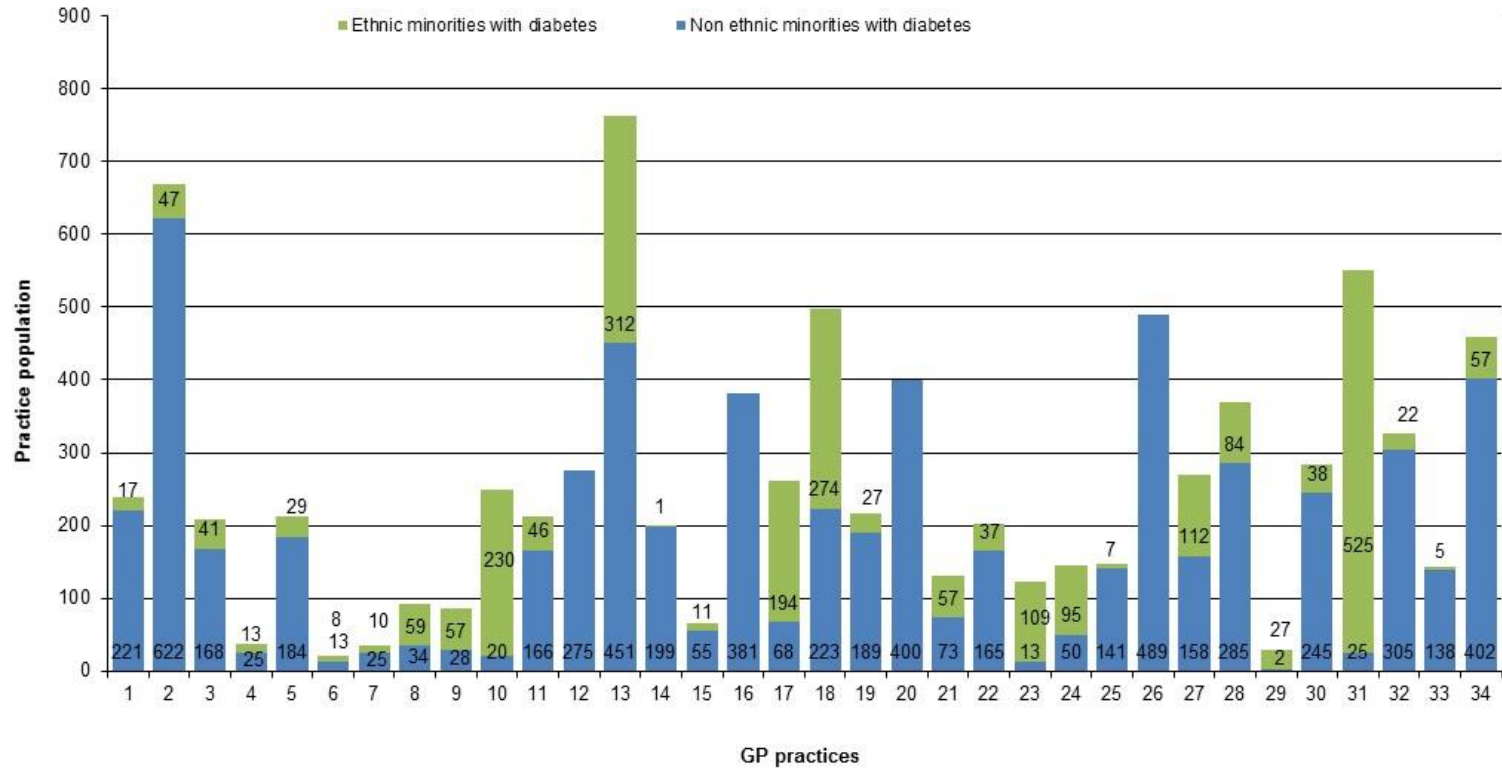


Fig.3: Culturally-competent diabetes service provision to ethnic minority groups in appropriate language based on 34 practices

