

A mixed methods evaluation of a diabetes peer support scheme in an inner city London area

Introduction

The diabetes mentor scheme was initiated across GP practices in an inner city London area covering the three boroughs of Westminster, Hammersmith and Fulham and Kensington and Chelsea in 2012.

The purpose of this report is to assess, via mixed methods analysis, the impact of diabetes peer mentoring on clinical and patient related outcomes, and describe characteristics of those who participated in the programme.

Local context

In 2011, Kensington and Chelsea had the 2nd lowest practice prevalence rate of diabetes in the country, Westminster the 6th lowest rate, and Hammersmith and Fulham the 8th lowest rate. This partly reflects the relatively young age profile of the area and general healthiness, but may also reflect 'under-diagnosis' of the disease.

There are areas with very high prevalence of diabetes, particularly those with deprivation and a large ethnic mix. These include Queens Park and Church Street in Westminster and Golborne in Kensington and Chelsea, where 5.2-5.3% of the population are known by their practice to have diabetes.

Figure 1: Diabetes prevalence across the three boroughs March 2012

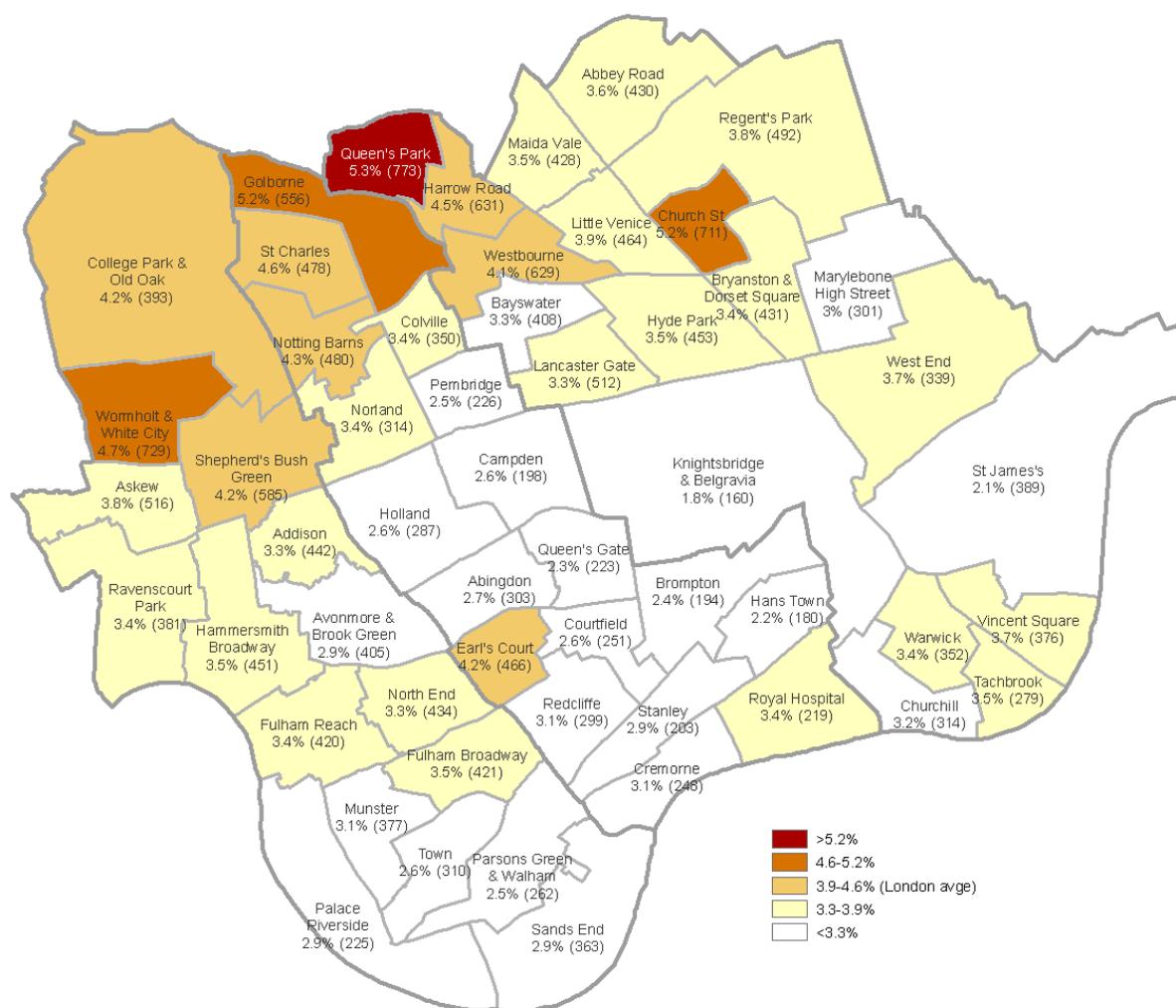


Table 1: Comparative data on diabetes indicators; sourced from diabetes community health profiles 2013

	Westminster /CL CCG	RBK&C/ WL CCG	Hammersmith and Fulham/ H&F CCG	Green group (demographically and ethnically matched)	England
Estimated total prevalence	7.0%	7.0%	6.2%	6.8%	7.4%
Estimated diagnosed prevalence	4.1%	4.6%	4.3%	4.7%	6.0%
Estimated Diagnosed prevalence as % of total	58.6%	65.7%	69.4%	69.1%	81.1%
HbA1c < 59	58.6%	54.7%	58.2%	58.4%	59.6%

Chol <5mmol	70.8%	71.6%	58.4%	72.2%	72.9%
BP <140/80	64.6%	63.9%	64.3%	65.1%	67.2%
Received enough support	63.8%	60.9%	58.9%	59.8%	60.4%
Confident in managing own health	91.5%	90.7%	90.2%	90.8%	92.7%

The data in Table 1: Comparative data on diabetes indicators; sourced from diabetes community health profiles 2013 indicates that there are indeed lower rates of diagnosis in Westminster, and poorer control of Hba1c in RBK&C than comparative groups. Cholesterol control is poorer in Hammersmith and Fulham than in comparative groups. All three boroughs have slightly poorer control than matched and national average.

Overall, patients in Westminster felt the most supported and most confident in self-management, and those in Hammersmith and Fulham the least supported. Results did not differ greatly from matched and national comparators.

Methods

The 'KNOW' Diabetes mentor scheme was initiated in January 2012 across 7 GP surgeries and 5 community settings. Further details regarding the structure process and delivery of the scheme can be found in the associated qualitative analysis report.

A retrospective evaluation was carried out in March 2015 to identify outcomes using data obtained from mentees in 4 GP practices:

Brook Green, Hammersmith and Fulham, 126 patients

Lillie Road, Hammersmith and Fulham, 23 patients

Victoria practice, Westminster, 33 patients

Soho practice, Westminster, 11 patients

Total: 193 patients

The practices tended to be in the middle (approximately 3-4%) deprivation bracket. The evaluation aimed to gather data in the following domains:

General descriptive: age, gender, ethnicity

Diabetes specific descriptive: type of diabetes, type of treatment, prevalence of comorbidities

Service usage: number of mentor sessions, duration of mentorship, number of GP visits.

Clinical (baseline descriptive and change after scheme): smoking status, cholesterol, body mass index (BMI), systolic and diastolic blood pressure, Hba1c.

Where possible a paired T-test analysis has been carried out to elicit any significant change. Separate analyses of mentees with type 1 and type 2 diabetes was considered in light of differing clinical behaviours, however due to the small number of participants with type 1 diabetes it was felt to be more pragmatic to analyse all as one. Out of all mentor schemes, Brook Green is unique in that the mentor is integrated into MDTs and feeds back directly to GP and nursing staff. A separate analysis was carried out with Brook Green surgery to see if any difference in outcomes was associated with this approach.

Results from the qualitative analysis can be found in the separate report. They have been used to inform subsequent discussion.

Results

Quantitative

Descriptive

Age and sex

Participants were fairly evenly distributed by gender with 48.2% male, 46.1% female and 5.7% unrecorded.

The mean age of participants was 58 with ages ranging from 26 to 91 as illustrated in Figure 2.

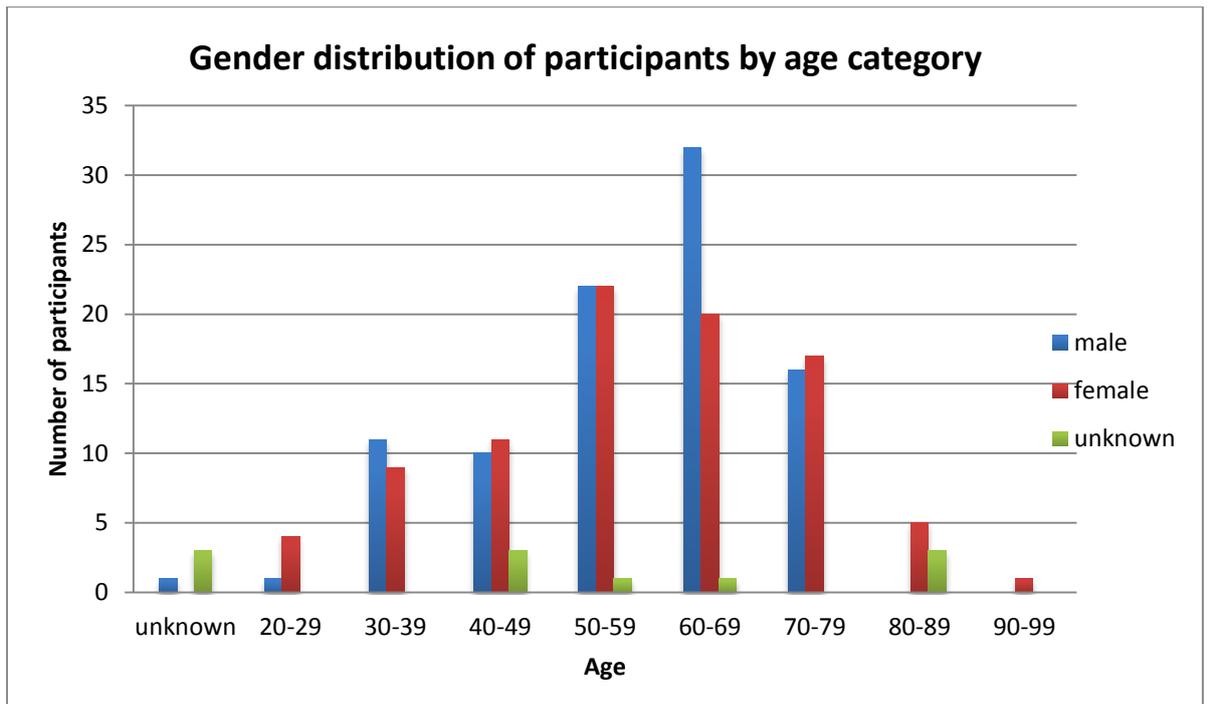


Figure 2

Ethnicity

Data on ethnicity was obtained in 160 participants. Just over half of participants were of 'white' ethnicity (see Figure 3.) The local population across the three boroughs has an ethnic distribution of 66% white ethnicity (2011 census.) This under-representation may be explained by increased prevalence of non-white ethnicities in local practice populations, increased prevalence of diabetes in non-white ethnic groups, or increased tendency for non-white ethnic groups to participate in the program.

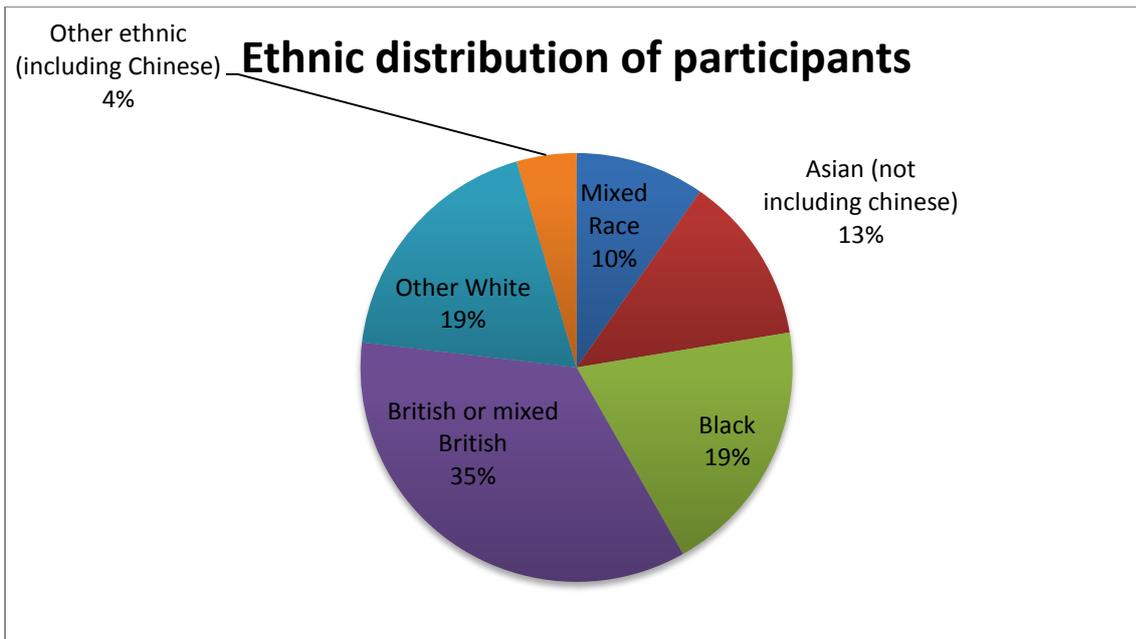


Figure 3

Type of Diabetes

Information on type of diabetes was obtained in 151 participants. The majority, 133, (69%) were type 2 and 18, (9%) were type 1 as seen in Figure 3.

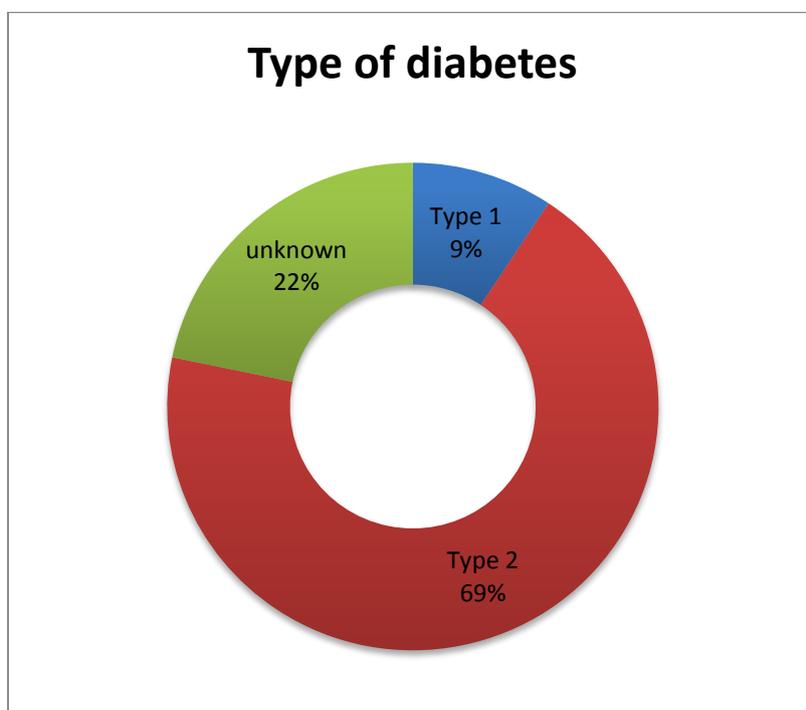


Figure 4

Patients with type 1 were generally younger,

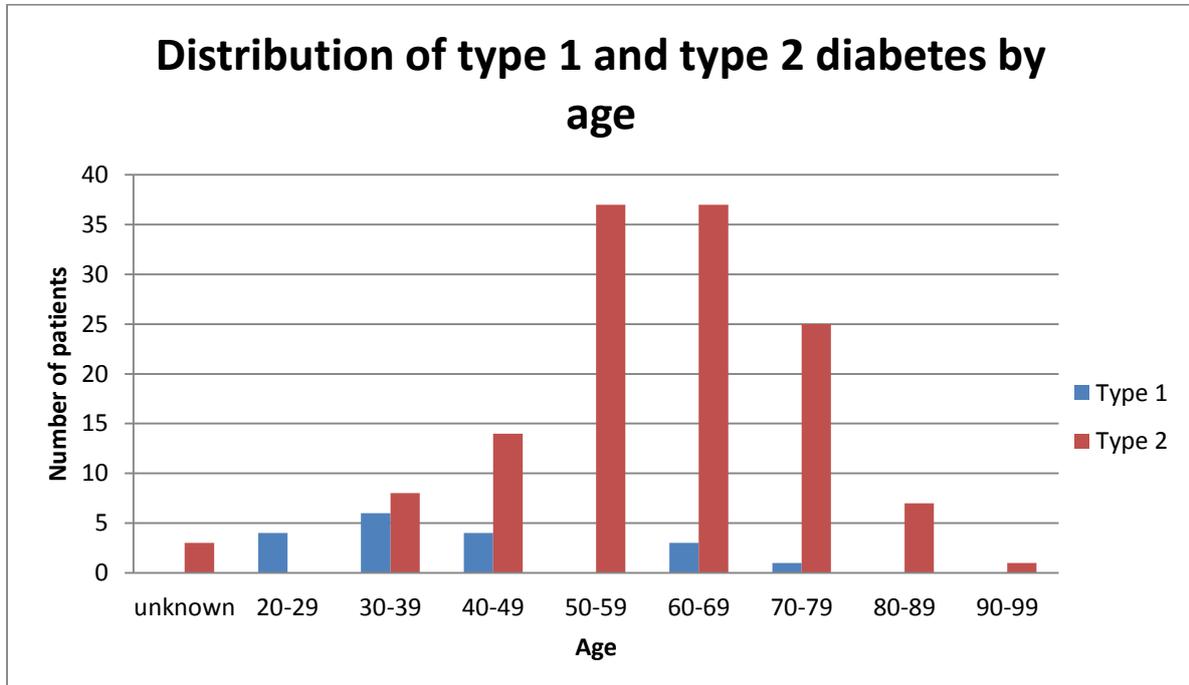


Figure 5]

Co-morbidities

The co-morbidities to participant ratio was 1.2:1 indicating that each participant had at least one co-morbidity. The most common comorbidities were hypertension and mental health problems.

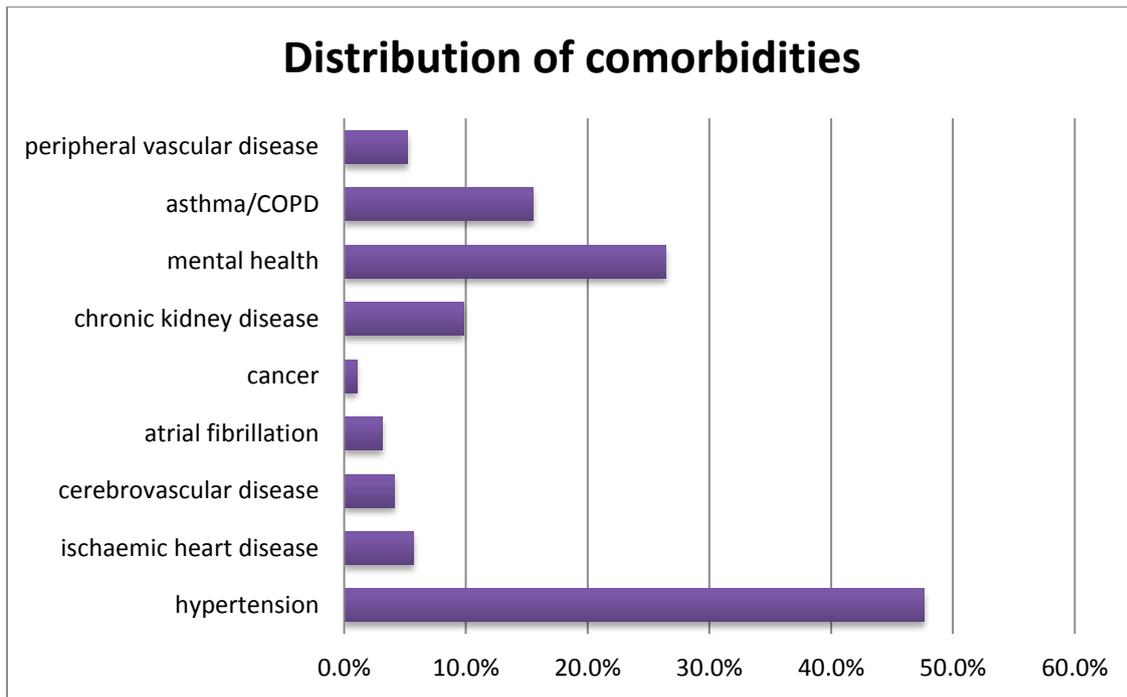


Figure 6

Treatment

Recording of treatment was inconsistent, and so limited analysis can be made. The 11 mentees receiving insulin only represent correctly recorded type 1 diabetics. Out of the mentees with type 2 diabetes, two thirds were on mixed insulin and oral therapy, suggesting relatively complex medication needs.

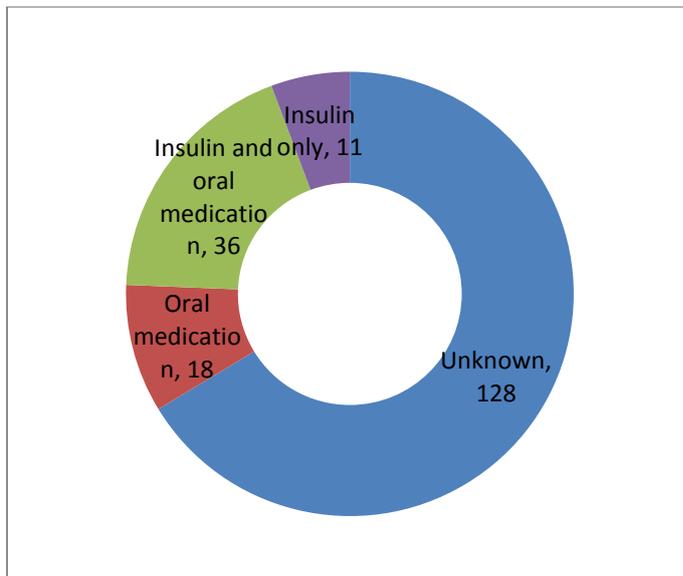


Figure 7: treatment received

Service use

Duration of mentorship was obtained as a proxy via calculating time between first and last clinical outcome measurement (or closest to start of scheme if clinical outcome predated this) and thus is not entirely accurate. However, this gives us a useful approximation by which to assess speed of change. Duration varied from 3.5 months to 37 months with a mean of 18 months.

It was not possible to obtain data on GP and nurse visits, however data was obtained from Brook Green practice on mentor activity. Mentor sessions ranged from 1-43 with the modal number being one and median 2, a skewed distribution. When combined with duration of treatment frequency of visits ranged from one per 7 days to one per 37 months with a median frequency of one session per 5 months and mean frequency of one per 9 months.

Clinical baseline

Smoking Status

Out of the 138 participants where smoking status before and after was recorded, one patient converted from smoker to non-smoker throughout the programme.

At the end of the programme 14% remained smokers, lower than national average of 19%.

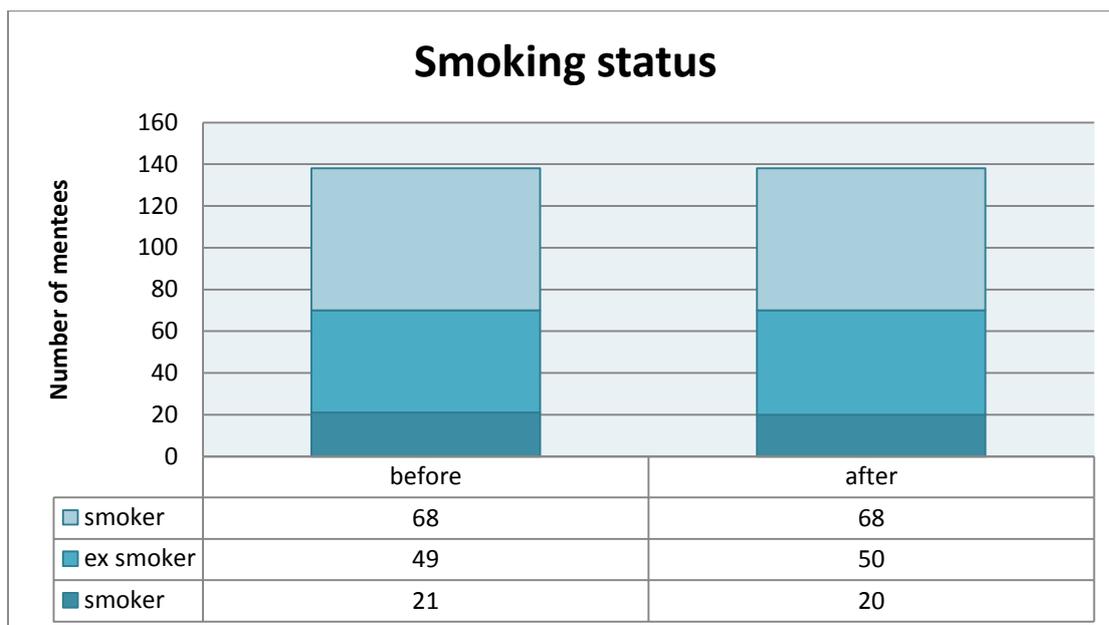


Figure 8

Cholesterol

Cholesterol levels were measured in 58 participants. Mean cholesterol level was 4.5mmol/L, with a range of 2.9 mmol to 7.1 mmol and a 95% confidence interval of 4.2-5.1 mmol/L. 10/58 (17%) of participants had cholesterol above 5mmol/L target, which is better than would be expected given the borough profile data.

There was insufficient data collected to compare before and after measurements.

BMI

Table 2: BMI mean and distribution before and after

	Number	mean	SD	95% CI
BMI before	129	31.34	6.09	19.17-43.51
BMI after	129	31.31	6.09	19.19-43.53

BMI was collected at baseline and post programme. For the 129 participants with pre and post data mean BMI pre was 31.34 Kg/m² and paired mean BMI post was 31.31 Kg/m² with wide variation seen. Notably, both means are above the 30 Kg/m² obesity threshold.

The total number of participants above threshold reduced from 68/129 (53%) to 66/129 (51%) representing a 3% reduction in patient with BMI above threshold.

Hba1c

Table 3: Hba1c before and after

	Number	mean	SD	95% CI
Hba1c before	124	59.7	18.4	22.9-96.5
Hba1c after	125	57.1	17.0	23.1-91.1

Hba1c was collected pre and post programme in 124 participants. Mean value pre programme was 60mmol/L and post 57mmol/L, with a wide variation seen.

37/83 (45%) of participants had an Hba1c above 59mmol target pre programme and 35/83(42%) post programme indicating a 4.5% reduction in numbers above threshold Hba1c.

Blood pressure

Table 4: Systolic BP before and after

	Number	mean	SD	95% CI
Systolic before	143	134.6	18.0	98.6- 170.6
Systolic after	141	131.5	14.9	101.7- 161.3

Table 5: Diastolic BP before and after

	Number	mean	SD	95% CI
Diastolic before	142	79.1	10.7	57.7-100.5
Diastolic after	141	76.7	11.2	54.3-99.1

Systolic blood pressure was collected pre and post in 144 cases and diastolic in 142. An outlier with a recording of 233 (likely to be miss-recorded) was excluded.

When compared to target thresholds 44/143 (30%) had a systolic above target of 140mm/Hg pre intervention compared with 22/141 (15%) after representing a 50% reduction in those above target systolic.

When compared to target diastolic threshold of 80mm/Hg, 59/142 (42%) were above threshold at baseline and 38/141 (27%) post intervention representing a 36% reduction in those above threshold.

Variable outcomes

A paired T-test analysis was carried out on before and after parameters to detect significant change:

Table 6: Paired T-test for clinical variables

Variable	number	Mean pre	Mean post	difference	P value
BMI	129	31.34	31.30	-0.04	0.88085
Hba1c	82	62	60	-2	0.24789
Systolic BP	143	134.6	131.4	-3.2	0.02278
Diastolic BP	142	79.1	76.6	-2.5	0.05743

A significant change was seen in systolic blood pressure only, where a 3mmHg change corresponds with an average duration of mentorship of 18 months and 2 sessions. A separate analysis with brook green data only had similar results, with a small and non-significant rise in BMI. A separate unpaired analysis was undertaken for Hba1c as the small number of paired data may have skewed analysis, however again no significant change was detected.

Table 7: Paired T-test for clinical variables - Brook Green data only

Variable	number	Mean pre	Mean post	difference	P value
BMI	108	31.2	31.3	+0.1	0.8192
Hba1c	54	58.8	58.5	-0.3	0.8878
Systolic BP	117	133.4	130.5	-2.9	0.0475
Diastolic BP	116	78.6	76.2	-2.4	0.1283

Table 8: Unpaired T-test for Hba1c

Variable	Number before	Number after	Mean pre	Mean post	difference	P value
BMI	124	125	59.7	56.7	-2	0.1855

Discussion

The diabetes mentor programme attracted people around the age of 60 and an even mix of men and women. The age distribution is consistent with a majority of participants with type 2 diagnoses and early on in their disease. ONS estimates a reduction in life expectancy of 10 years for people with type 2 diabetes and 13 years with type 1 diabetes, which taking an average London life expectancy of 79 (2010-2012)¹ would mean estimate life expectancy of 69 and 66 respectively. For those with type 1 diabetes the peak age was the third decade perhaps indicating a greater need for support when juggling work and family life. Qualitative review indicated that in many cases the nurse was the main 'sign-poster and promoter' of the scheme, thus nurse identification rather than patients' self-awareness of need for support may be a key driver behind this.

The diabetes mentor scheme was piloted in an area where overall disease rates were low, but concentrated in more socioeconomically deprived areas with a higher ethnic mix. This

¹ <http://www.ons.gov.uk/ons/rel/subnational-health4/life-expec-at-birth-age-65/2006-08-to-2010-12/stb-life-expectancy-at-birth-2006-08-to-2010-12.html#tab-Regional-Life-Expectancy>

was reflected in the high ethnic mix of the participants. This is encouraging regarding concerns raised by other researchers that there may be greater barriers to accessing peer support in those from more deprived backgrounds and the importance of having culturally specific themes. The qualitative feedback indicating that mentees valuing mentors as 'real world' and being on the 'same level' demonstrated the benefit of lay and culturally appropriate education.

Participants usually had at least one co-morbidity and out of those recorded, two thirds were insulin-dependent, indicating a relative complexity of disease management. Interestingly, mental health was the second most common comorbidity. This indicated a potential increased benefit of peer support for those with associated anxiety or depression. However, the uptake of the scheme is largely initiated by clinicians and it is unclear as to whether the mentorship had any impact on mental health as this was not measured in this evaluation.

Participants displayed a lower smoking prevalence than national rates; although still concerning given increased cardiovascular risk with diabetes, and one conversion from smoker to non-smoker was made during the programme – it is unclear to what extent this was influenced by participation in the programme.

Looking at baseline data, the participants had better cholesterol levels than local profiles suggested however majority were obese with a mean BMI of 31.31 Kg/m². Glycaemic and blood pressure control were highly variable with mean values similar to target values although slightly worse when compared to local borough profile data. This indicated that the high frequency of discussion surrounding weight management and diet and health education during mentor sessions were appropriate.

Clinically, a small significant change was seen in systolic blood pressure only throughout the duration of the scheme. Given a mean duration on scheme of 18 months, this is a very modest clinical outcome, however the low frequency of visits (mode = 1, median = 2) may account for the limited impact. Despite use of paired T-test analysis, the data must be interpreted carefully, as no measure is made of confounders such as use of a dietician, change in practitioner, external events affecting self-motivation. The more integrated practice of Brook Green was not shown to produce any difference in results in sub-analysis, although differences may be masked by the fact that the majority of total data is from Brook Green and the practice may have more subtle benefits not captured within clinical outcomes.

Nonetheless, in real terms small but concrete reductions in numbers of people above threshold levels for BMI, blood pressure and glycaemic control were seen throughout the duration of the scheme:

1 person stopped smoking

2 people achieved healthy weight

2 people achieved target glycaemic control (from paired analysis)

22 people achieved target systolic blood pressure

21 people achieved target diastolic blood pressure.

Conclusion

A significant reduction in blood pressure was seen. If we accept that this drop is attributed to participation in the scheme, this is an encouraging addition to the body of existing evidence around diabetes peer mentoring. The improvement in blood pressure but not BMI glycaemic control may reflect a greater impact of mentoring on medication adherence rather than diet.

The scheme has also demonstrated favourable engagement with ethnically diverse groups, and those with poorer glycaemic control, BMI and mental health problems indicating targeting those with higher need.

Difficulties in implementation were raised in terms of difficulty engaging mentees, difficulty achieving weight loss goals, lack of confidence in mentor's knowledge, and poor use of supporting infrastructure. This supports previous research that suggests need for high quality training to inspire confidence in mentors and better collaboration with health professionals did in medication adherence.

Some consideration should be given to the low frequency of mentor-mentee interactions and the reasons behind this, which could be due to capacity, need or quality of engagement/intervention. It is not clear whether a higher frequency or total or number of interactions would make any difference to outcome.

Ultimately a scheme will be more resource and cost effective the longer it runs, an important consideration given the current climate and the fact that this scheme is relatively young.

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