

Exploring organisational support for the provision of structured self-management education for people with Type 2 diabetes: findings from a qualitative study

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Novelty statement:

- Research into lack of uptake of diabetes structured self-management education has not previously considered how organisations affect attendance
- Absence of communication between the teams providing diabetes structured self-management education and their senior management structure can impede the effectiveness of delivery teams
- Clinical teams delivering diabetes education are frequently expected to provide administration, marketing and promotional support without proper resources or guidance

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- Successful implementation of diabetes structured self-management education frequently relies on a few dedicated staff, leaving even the most exemplary delivery of education vulnerable to changes in staffing

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Abstract

Aim

To explore the organisational context in which Type 2 diabetes structured group education is provided.

Methods

Four Clinical Commissioning Groups in England providing Type 2 diabetes structured self-management education participated in a qualitative study exploring the context for provision of that education. Using United Kingdom Diabetes Audit returns, two Clinical Commissioning Groups were selected with non-attendance rates of $\leq 25\%$, and two with non-attendance rates of $\geq 50\%$. From May 2016-August 2017, 20 interviews were conducted with Clinical Commissioning Group staff including: commissioners, healthcare professionals, managers, general practitioners and diabetes educators. Data gathering was prolonged as it proved challenging to engage with healthcare staff due to frequent local restructuring and service disruption.

Results

Local audits revealed discrepancies in basic data such as referral and attendance numbers compared to national audit data. There was a commonality in the themes identified from interviews: diabetes education was rarely embedded in service structure; where education uptake was poor, a lack of central support to delivery teams was noticeable; where education uptake was positive, delivery teams were actively engaged, sometimes relying on enthusiastic individuals. Both situations put the local sustainability of diabetes education at risk.

Conclusions

There appears to be a link between attendance rates and organisational issues, therefore when considering how to increase attendance rates, the state of the diabetes education infrastructure should be reviewed. Good uptake of diabetes education can be too reliant on the enthusiastic commitment of small teams or individuals delivering the education.

Keywords: Type 2 diabetes, diabetes mellitus, structured diabetes education, DSME, primary health care, health organisations, self-management, qualitative research.

Introduction

Group diabetes structured self-management education (DSSME) is an effective and economic way to provide people with diabetes with the knowledge and skills needed to become successful self-managers of their own condition¹⁻⁵.

Recent evidence indicates that when considered internationally⁶, both healthcare professionals and people with diabetes and their families consider provision and uptake to education to be suboptimal^{7,8}. Recent figures from the UK National Diabetes Audit which appear to demonstrate significant improvement in *referral* rates to Type 2 diabetes education of close to 90%, still indicate *attendance* rates for the same period to be around 7%⁹. While policy makers agree that poor access to self-management education must be addressed¹⁰, there **is** no clear agreement on **how to increase numbers**.

It is frequently implied in the literature that non-attendance at **DSSME** is an issue for people with diabetes¹¹⁻¹². For example, evidence in the UK exploring why people with diabetes do not attend DSSME focuses on issues such as: the stigma of diabetes¹³, the asymptomatic nature of Type 2 diabetes which hides its seriousness¹⁴⁻¹⁵ and a range of logistical issues related to access to programmes¹⁶. However, issues can be related to organisational deficiencies¹⁷ **and until recently these have been largely overlooked. The way in which DSSME is embedded in the diabetes care pathway¹⁸, budgeting, and the manner in which organisations appoint providers, and recruit and retain delivery teams are all likely to have significant influence on uptake**, as Hurley et al.¹⁹ noted.

This study explores **organisational factors** which might impact on the provision of DSSME in the UK through interviews with Clinical Commissioning Group staff directly involved in the commissioning of DSSME for people with Type 2 diabetes. It is

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based on a nested study of four Clinical Commissioning Groups in England, as part of a larger Diabetes UK-funded study (BDA: 11/0004632): 'Why do people with Type 2 diabetes, decline or do not attend group structured education?'

In the UK, health care is provided through Clinical Commissioning Groups, clinically-led statutory National Health Service bodies responsible for the planning and commissioning of local healthcare. These groups appoint both national health service and private organisations such as hospitals and community health teams to provide services including DSSME. Actual provision is not standardised across the country.

Methods

The Consolidated Criteria for Reporting Qualitative research (COREQ) checklist provides a 32-point summary of our research²⁰ (Table 1).

Selection of organisations

In November 2014, using published data from the Diabetes National Audit (2012-2013)²¹ four diverse Clinical Commissioning Groups in England took part in a qualitative interview study and audit. We restricted the study to those areas providing the DESMOND programme to limit potential confounding variables. Eligibility criteria were based on a 'did not attend' / decline rate of equal to or less than 25% (Low) and a 'did not attend' / decline rate equal to or greater than 50% (High).

Of the two organisations with low 'did not attend' rates, one was based in London (LowOne), and one in North East England (LowTwo). Of the two organisations with high 'did not attend' rates, one was based in the Home Counties (HighOne) and one in the North West of England (HighTwo). Clinical Commissioning Groups were

blinded to the category under which they had been invited. All four Clinical Commissioning Groups also completed a local audit (Table 2) to inform the interview schedule (Appendix 1).

Local research governance approval

Ethical approval was granted by the Office for Research Ethics Committees Northern Ireland (ORECNI Reference number: 13/NI/0024). Local research governance approvals were granted in the participating Clinical Commissioning Groups.

Interviews and sampling

The intention was to interview around 10 individuals in each Clinical Commissioning Group - representing different stakeholder views and experiences of local DSSME. Views were sought from: commissioners, clinical leads, general practitioners, practice nurses, educators, dietitians and DSSME administrators. For a variety of reasons, it was not possible to recruit the original numbers, nevertheless a total of 20 interviews were completed across the four Clinical Commissioning Group sites.

Interviewees were selected by a combination of purposive and snowball sampling. Purposive sampling, because we initially sought participants with responsibilities linked to the provision of, or referral to, DSSME, followed by snowballing sampling where interviewees provided a personal introduction to prospective new participants²². A full range of roles were included between all four participating Clinical Commissioning Groups, but not all roles were represented in each Clinical Commissioning Group.

Data collection

Telephone interviews were conducted by authors SA and MC between May 2016 - August 2017, using a prompt guide (Appendix 1). These were audio-recorded using encrypted devices and transcribed verbatim using a professional transcription service. The interview transcripts were fully anonymised. Interviewees were provided with a study information leaflet and consent form for completion and signature. Verbal consent was also obtained on recordings.

Analysis

Data were initially analysed to identify themes by means of content analysis. We used the constant comparative method to expand and enrich the data, and memo writing to assist in coding and analysis decisions²². Regular team meetings were held between SA, MC and RH, to discuss the accuracy and relevance of the identified themes with adoption, rejection or further development of each theme decided by achieving a level of consensus within the team. We used qualitative data indexing software (QSR Nvivo) to support data analysis.

Data saturation

Because of the reduction in the number of interviews, we considered data saturation as interviews took place. The two researchers conducting the interviews considered that at twenty interviews no new themes were being identified.

Results

Twenty interviews ranging between 17- 45 minutes in length were carried out across four organisations: LowOne (n=9), LowTwo (n=4), HighOne (n=2), HighTwo (n=5) (see Table 2).

Context of the interviews

Table 2 provides a snapshot of diabetes structured self-management education (DSSME) provision in each of the four Clinical Commissioning Groups, including details of the number of courses run, numbers referred and attending, and numbers of educators.

From Table 3 it can be seen that of the 20 interviews, 15 were given by members of the team responsible for delivering DSSME, and of these, 10 were educators, 4 were administrators, and 4 held a senior management role within the team.

Since the majority of the interviews were given by delivery team members, the overriding perspective is from close contact with people with diabetes and also with referring general practices. The remaining 5 interviews between them give the views of commissioners (2), one of whom had a dual role; general practitioner/ clinical leads (3), one of whom had a dual role; and one practice nurse (i.e. a nurse providing generic clinical care in general practice).

Staff perceptions of an under-resourced/ overwhelmed service

Interviewees described a complex matrix of management, where DSSME is one aspect of diabetes care, and where diabetes might itself be only one speciality within the team.

“Right, I’m the administrator for the diabetes team...I’m also there for the website as the DESMOND co-ordinator... we put all the referrals on for all the parts of the service which includes dietetics, podiatry...but we don’t just cover diabetes, we also look after the heart failure specialist service as well.” M114 (HighOne)

This environment of multiple responsibilities had the advantage of enabling useful networks with general practice staff, but delivery of diabetes education can quickly be put at risk when staff are ‘lost’ either permanently or temporarily by reason of illness, retirement, redeployment, job cuts etc.

“This yearI think we are down two because one person has left and another person is in a secondment doing a totally different job.... The lady on maternity is coming back, the lady who retired - her post hasn’t been filled so we are still juggling plates with that and we had somebody on long term sick and they’ve just come back, so we are having to cover. We had two who went off at once.” S015 (LowOne)

‘Did Not Attend’ rates and capacity

In terms of attendance and ‘did not attend’, 50% appeared to be regarded as a satisfactory figure by most of the teams, and a target acceptable to management.

“... the standard in [NAME] is 5% tolerance of DNAs and cancellations [for clinics] and that’s totally unsuitable for a DESMOND programme. So we were – we managed to negotiate them down, ... where ... cancellations were less than 50%.” M119 (HighTwo)

There was no complacency about the percentage of ‘did not attend’, but potential boosts to attendance met a major barrier in staff capacity and budget.

“... if we do get more patients to come, we’d have to put more sessions on, and the time constraints of that and whether ... the commissioners would fund it...” S010 (LowTwo)

Issues of increasing capacity featured strongly in the interviews but were overshadowed by narratives describing the ingenuity with which delivery teams

worked within their remit For example, education is often limited to people within 12 months of diagnosis but interviewees regularly ignored this rubric.

“...there are many people who in that first year are sort of shell shocked, we discussed this with a group of local GP’s recently and felt that ... opening it for the first two years would probably improve the uptake.” S017 (LowOne)

Educating referrers to diabetes education

Interviewees identified the point of referral as key to increasing uptake and reducing ‘did not attend’ acknowledging good practice among some practice nurses and general practitioners.

“...some of them, you know are really good at explaining what it is, they’ll have the leaflets in the surgery and give it to the patient.” M114 (HighOne)

Nonetheless, across the four Clinical Commissioning Groups it was also apparent that referrals from practice staff frequently appeared to be made without reference to the needs of individuals.

“GP didn’t even really mention it and they didn’t know they had been referred. Some people ... don’t even know they have diabetes, so it’s just a horrible start to the process.” S012 (LowOne)

Interviewees had ideas for increasing referrals including encouraging practice staff to be more effective referrers.

“...it’s not that they don’t want to do this, it’s literally that there are so many pressures ... so we talked about incentives and that’s been well received. And we’ve been exploring ... how we can introduce additional roles into primary care clinical pharmacy, health coaching roles to support diabetes and other long-term conditions... so we need some more capacity... but that takes a long time... to change that curve so, in the short term, it is a capacity challenge.” M122 (HighOne)

Teams were also ingenious in promoting DSSME to their communities, seemingly unaware of available resources within the wider organisation, particularly in marketing and communications.

“... there’s no marketing... we did, it was a couple of years ago now, like a bus and did a health thing ... we went round to supermarket car parks, but it’s sort of like time constraints, we haven’t done anything and I don’t think the CCG has either.” M114 (HighOne)

The impact of disconnection between management and front-line staff

While interviewees expressed positivity towards diabetes structured self-management education and their own roles in making it available, there was also a sense either of frustration at the organisation's inability to listen to those on the front line, or of switching off to the frustrations which were beyond their control. This could be related to constant changes in senior posts,

"...they've got lots of ideas of what should, shouldn't happen but they always have this service improvement person in post for a year and they finish their job and then the new person comes in and restarts the whole thing again". S012 (LowOne)

or connected with a more generic lack of dialogue between delivery teams and those in strategic management.

"...my feedback goes through the rest of the people that attend... they talk about a lot of different things and waffle on about things ... and nothing really changes and when it comes to education even though they have been given all the details, they have all these fancy ideas but actually have no real-world experience of how much work it takes and how much time people have and the resources and the rotas and the room availability and that kind of thing. So actually a lot of advice has been given from me to other people but it's just all about costs and what they want to get out of the same amount of people, which is hard." S012 (LowOne)

Even senior managers involved in strategic planning could also be affected by uncertainty.

"...over the last couple of years it's been a bit of grey area because there's been ... diabetes went out to tender... so we did this joint bid... but it was never followed through because of finances, so we're still sort of waiting to find out to hear what's happening... regarding the future..." M123 (HighTwo)

Discussion

Summary of, and reflection on, the main findings

The 20 interviews in this study contain rich data covering many aspects of diabetes self-management education and the detail of its provision **in populations with very different geographical and demographic needs.**

The combined results of the audit and interviews indicate that in terms of reporting the statistics of referral, attendance and decline of diabetes structured self-management, numbers can be misleading. Figures from national audit do not indicate reach, that is, the numbers of those eligible to receive diabetes structured education so that it is impossible to calculate the percentage of these who are referred.

Secondly, there is evidence from our study that 'did not attend' had become linked to lack of capacity to deliver a sufficient number of courses. Whilst an increase in 'did not attend' numbers was by no means encouraged, numbers seemed to have become a tacit mechanism for controlling budgets so that reductions in 'did not attend' rates were not pursued. Interviewees spoke of the changing organisational environment, increases in the number of referrals and the lack of staff available to run additional courses.

Thirdly, there appears to be general agreement across the four services sampled that general practice referrals are often ineffective, despite the considerable time and effort of delivery teams in engaging with practice nurses and general practitioners. The effectiveness of referrals is still reliant on individual clinicians^{18,23}.

It was acknowledged that practice staff are overwhelmed, and poor referrals do not necessarily equate to lack of interest. Nevertheless, interview narratives indicate that other models of referral should be considered. Nationally, a co-ordinated approach to recording referrals and attendance has been seen as the first step in highlighting the importance of following through referrals to DSSME²⁴.

Finally, it was noticeable that from the perspective of delivery teams, there was a distinct gulf between senior managers, that is, those whose business is strategic

planning and budgetary allocation, and those who deliver diabetes structured education. Interviewees expressed varying levels of frustration and uncertainty with management. There are, unfortunately, many examples of poor communication throughout the health service, and when such failures are embedded in corporate culture they may lead to systemic breakdown in service provision, as have been reported in the UK nationally²⁵.

As a result of the particular cultures prevalent in the four Clinical Commissioning Groups studied, some delivery teams practised *de facto* an independent system which had very little point of contact with strategists and commissioners in the organisation, except for providing summary statistics of the service outputs.

All 10 interviewees from delivery teams expressed a high degree of belief in diabetes structured self-management, and enthusiasm for their roles. In all the sites, one or perhaps two individuals could even be identified as the lynch pins of the service and key determinants of success.

Limitations and strengths

This study had several limitations. Firstly, although the researchers initially sought a greater number of interviewees, many of those approached declined to take part, or never responded to communications. Reasons included organisational restructure, retirement, job losses, promotion, being new in post, not having time, and lacking knowledge of diabetes education. This also led to a disproportionate number of interviewees who were directly involved in delivering education. Reflecting on this situation might suggest that those employed in services where uptake to diabetes education was low were less interested in, or positive about, DSSME and therefore less likely to engage with researchers.

A further limitation might be that several of the researchers were knowledgeable about organisational issues likely to impact on education provision and may have introduced an unconscious bias. However, this risk of potential bias was countered by one of the two researchers conducting the interviews having no prior knowledge and experience of delivering diabetes education. Conversely, researchers' prior knowledge provided the means to recognise the more subtle nuances of the evidence. As there were fewer interviews completed than originally proposed, a potential limitation is that theoretical saturation of the data was not achieved. However, the researchers were satisfied that no new themes could be identified by the time 20 interviews had been conducted.

Despite these limitations, the study has several strengths. Firstly, the impact of organisations' issues on provision of structured education has not been previously explored, and therefore this study addresses an important gap in the evidence. Secondly, although there was an imbalance in the proportion of interviews between the two groups, there was a reiteration of common themes across organisations.

Conclusion and implications for practice

The interviews in this study compellingly indicate potential problems when diabetes structured education is poorly embedded within an organisation. Although the findings of this paper are only indicators, they might suggest to any healthcare provider commissioning or delivering diabetes education, the importance of honestly reviewing existing systems and infrastructure.

We would suggest the following as good starting points for service improvement:

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- Health service providers to ensure a long-term plan for the financing and management of diabetes structured education, developed in partnership with stakeholders
- Diabetes education to be embedded in the diabetes care pathway
- A sufficient number of educators and courses to be provided to meet demand
- Appointment of a dedicated local co-ordinator
- Improved communication between senior management and education delivery teams
- Commitment from general practitioners and practice nurses to improving patient referral
- Investment in a rolling programme of public marketing for diabetes education
- All stakeholders including people with diabetes and their families to be involved in planning for diabetes education and support opportunities throughout life with diabetes.

References

1. Department of Health. *National Service Framework for Diabetes: Standards*. London: Department of Health; 2001
2. Carey ME, Davies MJ, Khunti K. Structured education in diabetes: a review of the evidence. *Diabetes & Primary Care*, 2012;**14**(3): 154-162.
3. Odgers-Jewell K, Ball LE, Kelly JT, Isenring EA, Reidlinger DP, Thomas R. Effectiveness of group-based self-management education for individuals with Type 2 diabetes: a systematic review with meta-analyses and meta-regression. *Diabetic Medicine*, 2017; 34: 1027-1039.
4. Jacobs-van der Bruggen MA, van Baal PH, Hoogenveen RT, Feenstra TL, Briggs, AH, Lawson K, Feskens EJ, Baan CA. Cost effectiveness of lifestyle modification in diabetic patients. *Diabetes Care* 2009 Aug; 32(8) 1453-8.
5. Hex N, Bartlett C, Wright D, Taylor M, Varley D. Estimating the current and future costs of Type 1 and Type 2 diabetes in the UK, including direct health costs and indirect societal and productivity costs, *Diabetic Medicine*; 2012; doi: 10.1111/j.1464-5491.2012.03698.x
6. Peyrot M, et al. on behalf of the Global DAWN2 (Diabetes Attitudes Wishes and Needs) Study Group. A multinational, multi-stakeholder study of psychosocial issues in diabetes and person-centred diabetes care. *Diabetes Research and Clinical Practice*, 2013; 99:174-84.
7. Holt RIG, et al. Diabetes Attitudes, Wishes and Needs second study (DAWN2): Cross-national comparisons on barriers and resources for optimal care – healthcare professional perspective. *Diabetic Medicine*, 2013; 30:789–798.
8. Byrne J, Davies MJ, Willaing I, Holt RIG, Carey ME, Daly H, Søren S, Peyrot M. Deficiencies in post-graduate training for healthcare professionals who provide diabetes education and support: Results from the Diabetes Attitudes, Wishes and Needs (DAWN 2) study. *Diabetic Medicine*, 2017; DOI: 10.1111/dme.13334

9. Health and Social Care information Centre. National Diabetes Audit. Report 1: care processes and treatment targets, 2016-2017. NHS Digital, 2018.
https://files.digital.nhs.uk/pdf/s/k/national_diabetes_audit_2016-17_report_1_care_processes_and_treatment_targets.pdf [Accessed 17 October 2018]
10. Chatterjee S, Davies MJ, Heller S, Speight J, Snoek F, Khunti K. Diabetes structured self-management education programmes: a narrative review and current innovations. *The Lancet Diabetes & Endocrinology*, 2018; 6(2): 130-142.
11. Schwennesen N, Henriksen JE, Willaing I. Patient explanations for non-attendance at type 2 diabetes self-management education: a qualitative study. *Scandinavian Journal of Caring Sciences*, 2015; 30: 187-192.
12. Winkley, K, Stahl D, Chamley M, Stopford R, Boughdady M, Thomas S, Amiel SA, Forbes A, Ismail K. Low attendance at structure education for people with newly diagnosed type 2 diabetes : general practice characteristics and individual patient factors predict uptake. *Patient Education and Counselling*, 2016; 99: 101-107.
13. Winkley K, Ewrierhoma C, Amiel SA, Lepp HK., Ismail K, Forbes A. Patient explanations for non-attendance at structured diabetes education sessions for newly diagnosed type 2 diabetes : a qualitative study. *Diabetic Medicine*, 2015; 32(1): 120-128.
14. Slevin MM, Horigan G, Davies M, Carey ME, Coates VE. Patients' reasons for non-attendance at structured diabetes education sessions for type 2 diabetes: a quantitative study. *Diabetic Medicine*, 2016; 33 (Supp 1): 122: P295.
15. Coates V, Slevin M, Carey M, Slater P, Davies M. Declining structured diabetes education in those with Type 2 diabetes: a plethora of individual and organisational reasons. *Patient Education and Counselling*, 2017; <http://dx.doi.org/10.1016/j.pec.2017.10.013>.

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16. Findlay White F, Slevin M, Carey ME, Coates V. 'What's the Point?': understanding why people with type 2 diabetes decline structured education. *In press*.
17. Lawal M, Woodman A, Fanghanel J, Ohl M. Barriers to attendance at diabetes education centres: perceptions of education providers. *Journal of Diabetes Nursing*, 2017; 21(2):61-66.
18. Mc Sharry, J, Dinneen, SF, Humphreys M, O'Donnell M, O'Hara MC, Smith SM, Winkley K, Byrne M. Barriers and facilitators to attendance at Type 2 diabetes structured education programmes: a qualitative study of educators and attendees. *Diabetic Medicine*, 2019; 36(1): 70-79
19. Hurley L, O'Donnell M, O'Hara MC, Carey ME, Willaing I, Daly H, Dineen SF. Is diabetes self management education still the Cinderella of diabetes care? *Patient Education and Counselling*, 2017 Oct; 100(10): 1957-1960.
20. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal of Qualitative Health Care*, 2007; 19(6): 349-357.
21. NHS Digital. *National Diabetes Audit 2012-13: report 1, care processes and treatment targets*. <https://digital.nhs.uk/catalogue/PUB14970> [Accessed 11February 2018].
22. Parahoo K. *Nursing research: principles, process and issues*. 3rd ed., Basingstoke: Macmillan; 2014.
23. Paige SR, Stellefson M, Singh B. Patient perspectives on factors associated with enrolment and retention in chronic disease self-management programs: a systematic review. *Patient Intelligence*, 2016 8:21-37.
24. Diabetes UK. *Improving data recording of attendance at diabetes structured education: guidance for diabetes structured education providers, GP practices and commissioners*. November 2016. <https://diabetes-resources-production.s3->

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eu-west-1.amazonaws.com/diabetes-storage/2017-08/Std_Approach_Guide_v10.pdf [Accessed 10 April 2018].

25. Macdonald A. *A long and winding road: improving communication with patients in the NHS*. Marie Curie. February, 2016.

<https://www.mariecurie.org.uk/globalassets/media/documents/policy/campaigns/the-long-and-winding-road.pdf>

Table 1: Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:

Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357.

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
<i>Personal Characteristics</i>		
1. Inter viewer/facilitator	Interviews were conducted by authors ME Carey and S Agarwal	8
2. Credentials	ME Carey, PhD, BA (Hons); S Agarwal BA(Hons)	-
3. Occupation	At the time of this research, ME Carey was Director of Structured Education Research Portfolio, Leicester Diabetes Centre and Honorary Associate Professor of Diabetes Research, University of Leicester . S Agarwal was a Research Associate in the Department of Health Sciences, University of Leicester and part of the SAPPHIRE group of health science qualitative researchers	-
4. Gender	Both researchers are female	1
5. Experience and training	ME Carey has a health research career of over 20 years, during which time she has conducted microethnography, qualitative interviews and focus groups. ME Carey received training in qualitative research at Loughborough University and in the Health Informatics Unit at the Postgraduate Centre for Medicine and Health at the University of Central Lancashire S Agarwal has a longstanding career as a qualitative researcher in health research latterly as a member of the SAPPHIRE group of social scientists working in health research, and based in the College of Life Sciences, University of Leicester.	-
<i>Relationship with participants</i>		
6. Relationship established	No. Participants were unknown to either researcher before commencement of the research	-
7. Participant knowledge of the interviewer	Participants were informed about the study prior to interviews through the patient information leaflet approved by the Office for Research Ethics Committees Northern Ireland, and had an opportunity to speak to the researcher about the study and the	8

	place of their interview in it prior to the interview taking place.	
8. Interviewer characteristics	Only basic information is provided	8
Domain 2: study design		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	The theoretical background was grounded theory, and researchers used the constant comparative method and content analysis	8
<i>Participant selection</i>		
10. Sampling	Purposive and snowball sampling were used to recruit participants	7
11. Method of approach	Email and telephone were used to approach participants, according to the contact information supplied by participants and their preferences	9
12. Sample size	20	8
13. Non-participation	A total of 40 individuals were initially approached. Out of these, 20 agreed to participate; 16 agreed to participate initially, but could not then be contacted; 4 declined to participate for reasons including new in post, leaving post, pressure of work etc.	7, 9
<i>Setting</i>		
14. Setting of data collection	Data was collected via phone while the participants were at work or at home according to participant preference	9
15. Presence of non-participants	No one was present at the interviews except the interviewer and participant	-
16. Description of sample	Data was collected from four clinical commissioning groups in England between May 2016 and August 2017. Participants were drawn from a range of disciplines and roles and included commissioners, clinical leads for diabetes, clinical team leaders, general practitioners, diabetes specialist nurses, educators, education administrators and co-ordinators	9-10, Table 1
<i>Data collection</i>		
17. Interview guide	A prompt guide was agreed between the researchers, but not provided to participants as the interviews were intended to be non-directive	Appendix 1
18. Repeat interviews	No repeat interviews were planned or carried out	-
19. Audio/visual recording	Interviews were audio recorded and professionally transcribed	8
20. Field notes	Field notes were made during the recordings	8
21. Duration	Interviews were 17-45 minutes in length. Timings were led by participants.	9
22. Data saturation	Despite the reduction in the number of interviews, both researchers agreed that at	8, 15

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	twenty interviews no new themes were being identified.	
23. Transcripts returned	Transcripts were not returned to participants	-
Domain 3: analysis and findings		
<i>Data analysis</i>		
24. Number of data coders	The two researchers who conducted the interviews carried out the coding	8
25. Description of the coding tree	Authors met on a regular basis to discuss interviews, coding and themes	-
26. Derivation of themes	Themes were derived from the data	-
27. Software	QSR Nvivo was used to support analysis	8
28. Participant checking	Participants were not invited to check analysis	-
<i>Reporting</i>		
29. Quotations presented	Quotations from participants were used and assigned individual numeric codes for purposes of anonymity	10-12, Table 3
30. Data and findings consistent	There was consistency between data and findings	10-12
31. Clarity of major themes	Major themes were identified and clearly presented and illustrated with quotations	10-12
32. Clarity of minor themes	Minor themes have been identified but were not presented due to issues of space.	-

Table 2: Audit results from four Clinical Commissioning Groups participating in an interview study on provision of Type 2 diabetes structured education.

Questions	Organisation*			
	LowOne	LowTwo	HighOne	HighTwo
National Diabetes Audit (2012/13) - DNA rates at time of selection Feb 2015)	14%	15%	51%	56%
Role/position in the organisation	GP Diabetes Lead	Safe Care Lead Diabetes	Administrator for anything diabetes related	Diabetes Educator
Business Planning and Finance				
When did your organisation begin providing DESMOND for people with Type 2 Diabetes?	2008	2012	2006	2013
Who provides DESMOND?	CCG Commission but [NAMED HEALTH SERVICE] community staff teach	Acute Trust	CCG	Other – [NAMED NHS Trust]
Is DESMOND provided throughout the geographical area covered by your organisation?	Yes	Yes	Yes	No
Was there a tendering process involved?	I don't know	No	No	I don't know
Is there a diabetes lead for your CCG/Trust?	Yes [NAMED PERSON]	Yes [NAMED PERSON]	Yes [NAMED PERSON]	Yes [NAMED PERSON]
Is there a business/financial plan in place for DESMOND?	Yes	Yes	Yes	Yes
If yes, would you be able to provide a summary/copy of it?	No	No	No	No
Is there an allocated budget for DESMOND?	Yes, unsure	Yes, annual funding of £48,106	Yes, unsure of this	Yes, not sure over how many years
DESMOND Courses				
How many DESMOND courses were run in 2014/15?	45	From April 2014 to end of March 2015 = 12	57	144 approximately

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Questions	Organisation*			
	LowOne	LowTwo	HighOne	HighTwo
How many people with diabetes were referred to DESMOND in 2014/15?	783	302	783	1,380
How are referrals to DESMOND made to the service?	Referrals are made by clinicians on a standardised referral form. We do not take self-referral at present.	Referral form - NHS email, fax, post via screening service	GP/ Practice nurse/ Hospital – HCP referral only	All new registered patients details are sent to us from the acute database self-referral, practice nurse referrals and any other discipline can refer
Of those who were referred, how many attended DESMOND?	314 (40%)	84 fully completed + 12 partially completed (32%)	397 (51%)	745 (54%)
DESMOND Educators				
In your organisation, how many educators are trained to deliver DESMOND?	10	7	8 Educators	5 completed DESMOND training
How many of your educators are currently accredited?	7	6	7 (1 newly trained)	2
How many of your educators are registered Health Care Professionals?	9	All of them	8	2 as 1 left to take up a position at another Trust
How many of your educators are lay educators (e.g. Health Care Assistants, from a non-clinical background)?	1	None	0	2, but they have not progressed further than training.
How are educators supported to maintain/improve their skills and competency?	Each educator follows the professional quality development pathway	Reflections, Peer support, Training Day, DESMOND quality assurance group	Individually responsible, self-directed learning, mandatory, self-reflection update every 3 years	Attendance at DESMOND study days, professional quality development pathway, personal/ peer reflection, university courses in diabetes
DESMOND Coordinators				

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Questions	Organisation*			
	LowOne	LowTwo	HighOne	HighTwo
How is the DESMOND programme managed on a day-to-day basis (e.g. is there a local coordinator or administrative support?)?	Local co-ordinator [NAMED PERSON]	DESMOND/ Register Co-ordinator	This is my role - no dedicated time to spend on DESMOND specifically. I am the Local co-ordinator, 2 part time people but also cover another specialist service	We have administrative support
What arrangements are in place to allow educators/local coordinators/administrative support to have time dedicated to DESMOND (e.g. how much time? How does this fit in with their overall workload/other responsibilities?)?	The local co-ordinator's job role is 50% DESMOND coordination/lay teaching and 50% other. Coordinator also works for four specialist teams, line manages admin staff and coordinates education for staff within the local vicinity.	Co-ordinator has time as part of their role, educators fit in with work load	Aren't any - part of the job as and when, fit in around everything else	Educators 1.8 posts. 50% of administrator's time is allocated to DESMOND
How many venues/localities are used to deliver DESMOND?	3	2	2 venues within 2 different areas of [NAMED LOCALITY]	4
What type of venues are used to deliver DESMOND?	Community venue, hospital	Hospital, community venue, museum	Community venue, Community outpatients	Community venue
Do you capture patient's satisfaction/experiences of DESMOND?	Yes, all patients fill in evaluation forms before leaving the session	Yes, at the end of each session a patient questionnaire is completed	Yes, evaluations, patient recorded outcome measures, comment book	Yes, DESMOND evaluation and 'talk to us' evaluation sheets
Monitoring and Evaluation				
What marketing activities are in place to disseminate awareness about the DESMOND programme?	Posters in surgeries, advertised on CCG website, leaflets and emails sent to HCP's by coordinator and sessions about education presented at local teaching sessions by coordinator.	DESMOND leaflets, DESMOND posters were sent to practices and periodically highlighted through Diabetes Newsletter	Can observe DESMOND (GPs and/ or practice nurses). Practice nurse link update meetings. Leaflets in surgeries, send out booklets with letters, big waiting lists.	Newspapers, trust website, Twitter, Facebook, meetings with GPs and practice nurses and anyone who will listen, posters in podiatry, surgeries. We visit all disciplines and leave posters and leaflets.

Questions	Organisation*			
	LowOne	LowTwo	HighOne	HighTwo
Do you keep a local database to record information about DESMOND (e.g. those invited, attended, DNAs)?	Yes, all details kept on Excel spreadsheets	Yes, Pro wellness diabetes register and monthly spreadsheet. Monthly contracting information goes to CCG.	Yes SystmOne	Yes, key performance indicator
How do you use this data?	We have used this data to change various things such as, time of sessions, days of the week sessions held, change of venue, change in amount of sessions presented. We also plan to use this data to alert practices if they are not referring enough patients or are consistently making inappropriate referrals.	Informs CCG of achievement of key performance indicators and allows us to monitor who is referring and if referral axe low contact the practice. Also identify if increase did not attend rates what the contributing factors could be and come up with a plan to resolve.	Referral information, monthly reports to CCGs. Helps determine if want to schedule more sessions waiting lists), these that haven't responded.	For performance management and capacity and demand forecasting
Do you have a service specification in place (e.g. identifying key performance indicators that need to be achieved)?	Yes	Yes	Yes	Yes
If yes, could you provide a copy of this if requested?	No	Yes	No	No

Questions	Organisation*			
	LowOne	LowTwo	HighOne	HighTwo
Do you conduct regular audits/have monitoring procedures in place?	Yes, details of attendances are sent to DESMOND national office, the health innovation network has also used our data to compare with local CCGs to improve outcomes. On a monthly basis all data is sent to the contracts and finance manager.	Yes, monthly contracting information to CCG.	Yes, through monthly reports that submitted to CCGs. One GP practice wants to know of those who referred, who attended? Action plan - risk factor sent back to GPs. But reviewing service specification so may be possible for all GP practices.	Yes. We have conducted a focus group with participants who had attended the programme which led to us visiting the local medical council meeting which has initiated a plan of action with the trust communications team which is in progress. We have been in touch with The DESMOND National Director who has suggested we can send our evaluation sheets to Leicester to have them audited.

Abbreviations:

DNA – did not attend

GP – general practitioner

DESMOND – Diabetes Education and Self-Management for Ongoing and Newly Diagnosed (diabetes education programme)

CCG – clinical commissioning group

NHS – national health service (UK)

HCP – healthcare professional

SystemOne – computer system used in UK general practice

Table 3: Interviewees by site and job role

Name of organisation	Interviewee	Job role
LowOne	S012	Diabetes Administrator, DESMOND* educator and coordinator
	S013	General Practitioner & Clinical Lead
	S014	DESMOND educator & Clinical Team Lead for Diabetes
	S015	DESMOND educator, Specialist Diabetes Nurse
	S019	Practice nurse
	S017	General Practitioner
	S016	DESMOND educator/Dietitian
	S011	DESMOND educator and Diabetes Specialist Nurse
	M120	Commissioner and General Practitioner
LowTwo	S020	DESMOND coordinator
	S010	Diabetes specialist nurse & DESMOND educator
	S018	Dietitian & DESMOND educator
	S021	Safe Care Lead Diabetes & DESMOND educator
HighOne	M114	Administrator for Diabetes Team
	M122	Commissioner
HighTwo	M123	Team Leader
	M119	Clinical Team Manager
	M121	DESMOND Co-ordinator
	M117	DESMOND Educator
	M118	DESMOND Educator

*Diabetes Education and Self-Management for Ongoing and Newly Diagnosed

Note: The UK does not have licenced diabetes educators. Healthcare professionals, and in some programmes, lay people, receive professional training to deliver education. Healthcare professionals deliver education as part of their clinical role.