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Original citation:
Zeh, P, Young, A, Gholap, N, Randeva, H, Robbins, T, Johal, K, Patel, S & O'Hare, JP 2023, 'Diabetes specialist intervention in general practices in areas of deprivation and ethnic diversity: A qualitative evaluation (QUAL-ECLIPSE)', Primary care diabetes, vol. (In-Press), pp. (In-Press).
https://dx.doi.org/10.1016/j.pcd.2023.10.012

DOI 10.1016/j.pcd.2023.10.012
ISSN 1751-9918
ESSN 1878-0210

Publisher: Elsevier

Primary Care Diabetes xxx (xxxx) xxx

Contents lists available at ScienceDirect

Primary Care Diabetes

journal homepage: www.journals.elsevier.com/primary-care-diabetes

Diabetes specialist intervention in general practices in areas of deprivation and ethnic diversity: A qualitative evaluation (QUAL-ECLIPSE)

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ARTICLE INFO

Keywords:
Diabetes
Primary care clinicians
Ethnic diversity
Specialist-led
GP practice-based service
Cultural appropriateness
Virtual clinics

ABSTRACT

Aim: To assess patients' and healthcare professionals' perspectives of a specialist-led Diabetes Risk-based Assessment Clinic (DIRAC) for people with diabetes at high risk of complications (PWDHRC) in areas of deprivation in Coventry, UK.

Methods: A qualitative evaluation of a pilot trial, comprising a specialist team intervention (DIRAC), was undertaken in seven GP practices through observations of weekly virtual or occasional face-to-face patient consultations and monthly interventionists' meetings. Semi-structured interviews were carried out post-intervention, with PWDHRC, primary care clinicians and diabetes specialists (interventionists). Thematic analyses of observations and interviews were undertaken.

Key findings: Over 12 months, 28 DIRAC clinics comprising 154 patient consultations and five interventionists' meetings, were observed. 19 interviews were undertaken, PWDHRC experienced 'culturally-sensitive care from a specialist-led clinic intervention encompassing integrated care. This model of care was recommended at GP practice level, all participants (PWDHRC, primary care clinicians and diabetes specialist interventionists) felt upskilled to deal with complex diabetes care. The EMIS and ECLIPSE technologies utilised during the intervention were perceived to positively contribute to diabetes management of PWDHRC despite reservations around cost and database.

Conclusion: The specialist-led DIRACs were largely appreciated by study participants. These qualitative data support the trial progressing to a full-service evaluation.

1. Introduction

Diabetes, in all forms, imposes a high human, social and economic cost on many countries; it is the fourth most common cause of death globally [1]. Diabetes is generally a lifelong disease, with potentially serious micro- and macro-vascular health complications, reduced life expectancy [2,3] and quality of life [4].

Care should be adapted to user needs [5]. In Coventry, a medium-sized, ethnically-diverse UK city, low health literacy hampers access to care for people living in the deprived inner-city areas, leading to poorer self-management [6] and exposing healthcare inequalities [7, 8]. A patient-centred approach and understanding the patients' cultural background can facilitate care that is responsive to the health beliefs of diverse populations [9,10].

Of the near half million Coventry population, 6.8% have a diabetes diagnosis [11]. A local health priority is to reduce the variation in diabetes care in primary care and provide services closer to home [12]. However, there are few new models of integrated diabetes care incorporating support of general practice staff. The introduction of systems like ECLIPSE (Electronic Checking Leading to Improved Prescribing Safety & Efficiency), an NHS Digital service for patient risk stratification alerts with automated access to specialist advice) [13] and EMIS (Egton

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https://doi.org/10.1016/j.pcd.2023.10.012
Received 9 August 2023; Received in revised form 21 October 2023; Accepted 29 October 2023

Medical Information System), a primary care database in England allows transfer of patient data between health sectors and enable remote review of people at high risk of complications from diabetes (PWDHRC). To maximise the benefit of these shared technologies pre-COVID-19, we sought to understand how to best deliver care to PWDHRC [14,15].

A pilot cluster-randomised trial of specialist-led Diabetes Risk-based Assessment Clinics (DIRAC), called *'Reducing Variability and Improving Diabetes Care in General Practices in deprived and ethnic areas'* [16] was conducted between July2016 and August2018, aiming to upskill primary care clinicians (PCCs), i.e., general practitioners (GPs) and practice nurses, to provide effective diabetes care, closer to home. The intervention was the input of specialists in diabetes care ('interventionists'); two hospital-based consultants (NG, JPO), a senior nurse (KJ) and a dietitian (SP) and was compared with usual care. Pilot trial's results are reported elsewhere [17]. We report on the qualitative component of the trial.

1.1. Aim and objectives

Aim: to explore the perspectives of PWDHRC, PCCs and diabetes specialists (interventionists) of the specialist-led DIRAC in deprived inner-city areas of Coventry.

Objectives: to explore:

- Practicability
- Cultural appropriateness
- Acceptability in primary care
- Sustainability of the intervention

1.2. Methods

The study adhered to the Consolidated Criteria for REporting Qualitative (COREQ) research [18,19].

1.3. Study design

The DIRAC comprised two approaches: i) virtual contact or ii) occasional face-to-face consultations with PWDHRC, when identified by PCCs via ECLIPSE to be at high risk of complications.

1.3.1. Setting

The qualitative evaluation was undertaken in a purposive sample of seven GP practices in deprived areas recruited to the trial.

1.3.2. Procedure

Two qualitative methods were utilised to explore the participants' perspectives of the intervention: participant observation and semi-structured interviews.

1.3.2.1. Participant observation. Over the 12-month study duration, the researcher (PZ), observed interactions at weekly clinics of diabetes interventionists with PCCs and made handwritten notes; PWDHRC were sometimes present. Monthly interventionists' meetings were also observed.

1.3.2.2. Interviews. Interviews [topic guides (online Tables S1-S3)] were carried out around six weeks post intervention. Open-ended questions were utilised to give a broad perspective, for example, what worked or did not work, with the intervention.

Participants were offered interviews at their workplace, GP surgery or home. The interviews were audio-recorded, transcribed verbatim and then checked for completeness. When no new data were elicited, no further interviews were conducted.

1.4. Participant sample and recruitment

Purposive sampling was utilised to recruit participants who were contacted by letter with an accompanying participant information sheet. At least three participants within each of the participating groups (PWDHRCs, PCCs and interventionists) were recruited to provide a breadth of experiences and perspectives.

1.5. Inclusion Criteria

- People who participated in the trial intervention arm.

(a) PWDHRC:

- Adult patients > 18 years
- Able to consent.

(b) PCCs:

- GP or practice nurse delivering diabetes care
- Employed in current post for at least six months.

(c) Interventionists:

- Diabetes specialist healthcare professionals.

1.6. Exclusion criterion

PWDHRC deemed by their GP, unable to participate.

1.7. Data analysis and management

Thematic analysis [20] was undertaken representing a level of patterned response or meaning across the dataset [21]. Field notes and interview transcripts were uploaded into the NVivo V.10 [22] to facilitate data management and coding. Observation and interview data were analysed separately, then synthesised, providing additional insight. Data were organised into descriptive codes, and then themes and sub-themes were identified by two researchers (PZ and AY). Discrepancies were discussed and modified by consensus, contributing to validity [23]. Similarities and differences between the three participant groups were identified and then sub-themes, refined [24]. All interview participants received a summary of the findings to check for accuracy.

1.7.1. Patient and public involvement

All stages of the study were developed in consultation with Warwick Diabetes and Education User Group: people with diabetes (PWD), experienced in research.

1.8. Ethical considerations

Ethics committee approval was granted by National Research Ethics Service (NRES) Committee West Midlands - Solihull (Reference 16/WM/0074), April 2016.

1.9. Findings

Eight GP practices were recruited; one practice did not engage despite encouragement. 19 participants were recruited (eight adult PWDHRC, eight PCCs from the seven practices), and three interventionists.

1.9.1. Participant Observation

1.9.1.1. DIRAC clinics. Over 12 months of observation during the trial

Table 1
Diabetes Specialists clinic consultations.

Interventionist	No. of clinics / sessions	Number of cases	No. of cases with patient & relatives present / %
Diabetes Consultants	4	26 (8 with patient present, 18 without patient present)	8 (31%)
Diabetes Specialist Nurse	13	82 (51 with patient present, 31 without patient present)	50 (61%)
Diabetes Specialist Dietitian	8	31 (20 with patient present, 11 without patient present)	15 (48%)
Joint clinics (3 above)	3	15 (4 with patient present, 11 without patient present)	8 (53%)
Total	28	154 (83 with patient present, 71 without patient present)	81 (53%)

intervention period, there were 28 DIRAC clinics comprising 154 consultations, each lasting 2.5–4 h (Table 1). Case discussions between the diabetes specialists and the PCCs averaged 8 min; patients were then contacted by phone to discuss outcomes. Patient face-to-face consultations averaged 20 min.

The patient consultations with the four interventionists encompassed medical, behavioural and lifestyle changes, striving to upskill PCCs on managing complex diabetes cases, locally.

1.9.1.2. Interventionists' Meetings. Five meetings were held of around an hour attended by all interventionists with discussion around successes and challenges and strategies for subsequent clinics.

1.9.2. Interviews

Eight of the 19 participants were interviewed at home; one patient in a clinic setting and ten in their workplace, over three months. Patient demographics are summarised in Table 2. All participants self-identified their ethnicity.

1.9.2.1. PWDHRC. Eight participants were interviewed. Four participants were white British; four born in South Asia.

Details of patient' characteristics and a summary of responses are displayed on Online Table S4. All PWDHRC were diagnosed with Type 2 diabetes, living with diabetes from 2 to 30 years with a mean of 13 years.

1.9.2.2. Primary care clinicians. PCCs comprised five GPs and three Practice Nurses.

All PCCs spoke English; two spoke additional languages Hindi and Marathi, and Hindi and Punjabi, respectively. Online Table S5 depicts the demographics and PCC summary responses.

1.9.2.3. Interventionists. Six languages (English, Punjabi, Hindi, Marathi, Urdu and Guajarati) were spoken by the interventionists, facilitating patient discussion in their first language (online Table S6 collates a summary of the interventionists' responses).

1.10. Themes and subthemes elicited from observations and interviews about diabetes risk assessment clinics

Following analyses of the observations and interviews, four themes, each with three subthemes were elicited (Fig. 1).

Table 2
Participants' demographics.

Gender		Ethnicity			Professional statue			Average age
Male	Female	White British	South Asians	Black British	PWDHRC	PC clinicians	Interventionists	
8	11	9	9	1	8 (2 employed, 2 unemployed, 4 retired)	8 (5 GPs, 3 PNs)	3 (1 consultant, 1 DNS, 1 DSD)	48.7

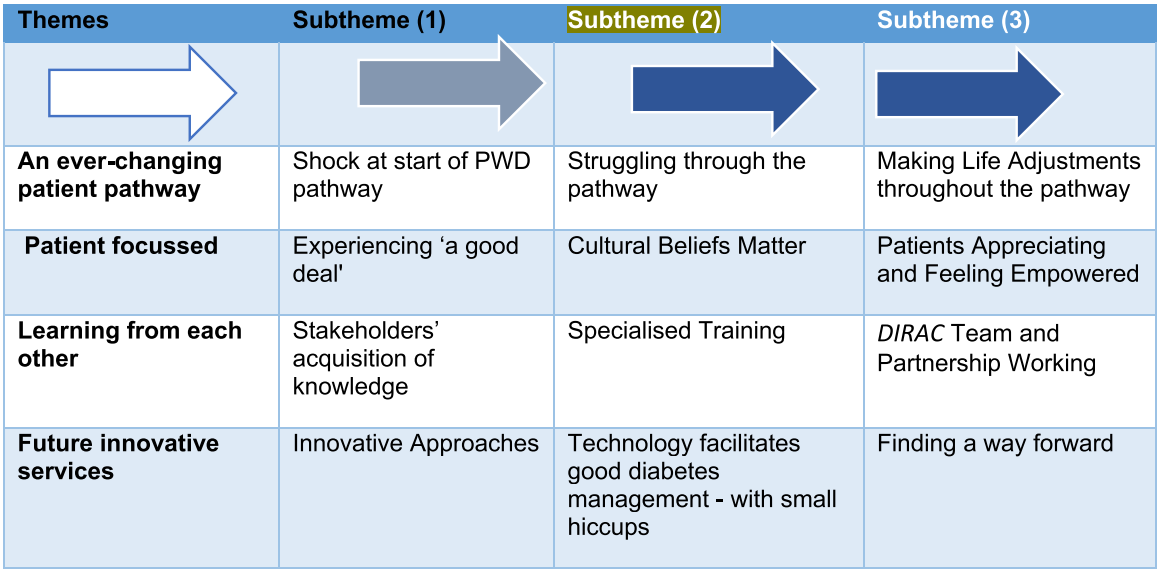

Fig. 1. Themes and subthemes.

1.11. Theme 1: An ever-changing patient pathway

1.11.1. Shock at start of PWD pathway

Half of the PWDHRC interviewed reported feeling shocked at their diagnosis with the remaining, 'expecting it'. Stigma, distress and lack of knowledge of diabetes were voiced:

I was frightened when told I have developed diabetes because it was a stigma. I think it's just initial shock, because you don't know much about it, so you think the inevitable [P7_White female_Interview].

I was really upset. ….one day I just fainted, and they took me to the hospital and told me that I was suffering with diabetes, I didn't know where to start [P8_Indian Female_Iinterview].

1.11.2. Struggling through the pathway

Supporting the patient pathway was challenging for PCCs due to non-compliance and sometimes slow acceptance of 'living with diabetes' from PWDHRC.

The greatest issue with our patients is compliance. sticking to their medications they don't want to take, denial that they have diabetes because they generally feel well…. [PCC 5_White Female_Interview].

1.11.3. Making life adjustments throughout the pathway

Some PWDHRC found it difficult to adjust following diagnosis.

I've now come to terms with it [diabetes]. Although my control isn't always the greatest… it's probably better now, but I slip up a lot…I'll continue to do the things they [interventionists] told me…, sitting at nighttime on my own, I pick on really bad stuff; no excuse really… [P1_White Male_Interview].

The only thing is that I'm now stuck to a timetable…. I haven't been on holiday yet since prescribed insulin. something else I've to think about, doing the injections whilst I'm out there, the only thing I am worried about is, it's going to cost a fortune for life insurance. [P5_White Male_Interview].

1.12. Theme 2: Patient focussed

1.12.1. Experiencing a good deal

PWDHRC experienced 'a good deal' from DIRAC, with time for discussion of individualised care, they felt empowered to self-manage their diabetes.

It's actually about how can we change things for them [PWDHRC], how can we help them, and how can I say, how they've been involved in their own care' [DSN_Interview].

Active listening mattered to the PWDHRC:

Yes, they listened to me. They all helped me because my diabetes was really bad, the nurse said she will see me every two weeks… I took their advice on increasing my insulin and [keeping to] the diet [P4_Indian Male_Interview].

I chatted to the dietitian…. down to earth, and the diabetes nurse, they listened to your concerns. [P1_White Male_Interview].

A PCC cited individual patient outcomes to illustrate the worth of the DIRAC:

A young diabetic man was poorly controlled. He rarely takes his medications…his HbA1C was uncontrolled, so getting [Consultant] involved, having a face-to-face discussion and change of medications, his control returned to normal [PCC 7_Black British Male_Interview].

1.12.2. Cultural beliefs matter

Diversity in the practice was acknowledged and embraced in the clinics. The White British PCCs stated language as a barrier for engaging with some PWDHRC despite interpreters.

So, when I start speaking to them in their language, or talk about or describe food, in Guajarati or Hindi, they feel they can engage with me, much more open. [Dietitian_Interview].

Cultural barriers, e.g., a stigma around insulin [25] may have contributed to patients' reluctance to starting insulin.

I don't like insulin; but the doctor said my kidneys could get worse. I thought, 'Okay'; my family said, 'try it'. I've been on it for two months; my sugar readings are good… [Indian Female Participant_Observation].

Individualised Information and Support was given:

[Regarding Ramadan], engage them before, explain their medications, what to do. If somebody is not well-controlled, we ask them not to fast… and if they still want to continue because of belief, we support them [DSN_Interview].

1.12.3. Patients appreciating DIRAC and feeling empowered

Some patients felt that the DIRAC supported them living with diabetes.

When the specialist was talking with my GP and me and changing my medications, I said, I can manage that; he [Consultant] said that the nurse will support me with insulin, I was happy… [P5_White Male_Interview].

It's [DIRAC] helpful in that I now watch my diet; I know I just can't drink much beer because of carbohydrates…… so now I am careful, [P3_Indian Male_Interview].

1.13. Theme 3: Learning from each other

1.13.1. Stakeholders' acquisition of knowledge

All participants felt upskilled, with PCCs acquiring knowledge on how to manage PWDHRC locally; interventionists reported making a positive difference to PWDHRC.

I've learned so much. As a matter of fact, it's like I've been to university and refreshed everything … [Dietitian_Interview].

Yeah, I think it's a great learning curve [Diabetes Consultant_Interview].

A PCC who preferred the face-to-face DIRAC justified:

In a face-to-face with the patient, [Consultant's name] talked to them, requested their GAD [Glutamic_Acid_Decarboxylase] tests; now, they are Type 1, I learned a lot [PCC 5_White Female_Interview].

1.13.1.1. Specialised training. PCCs highlighted insulin initiation and titration as 'difficult'; training sessions followed this finding.

Starting patients on insulin can be challenging due to lack of specialist knowledge…., so having specialist diabetes team in the practice is very useful [PCC 3_White female_Interview].

1.13.1.2. DIRAC teamwork and partnership working. Working as an interventionist 'team' plus partnership working between GP practice staff and interventionists were key to the delivery of intervention:

I think I had an excellent relationship with the GPs; … In fact, I had several emails… appreciating the diabetes team [Consultant Diabetologist_Interview].

I think the consultant and dietitian were forthcoming with their knowledge, we worked together very well [PCC 1_White Female_Interview].

Table 3
Innovative approaches of managing PWDHRCs stemming from QUAL-ECLIPSE.

Innovative Approaches	Number of participants suggesting approach n (%)
i) Virtual Clinics as an innovative model of care	15 (94%)
i) Monthly diabetes Consultant-led clinic sessions	7 (88%)
i) Integration of ECLIPSE and EMIS databases and roll out to all local GP practices	7 (88%)
i) Train primary care clinicians on insulin initiation / insulin titration, carb counting etc. to ensure prompt management of complex diabetes cases within GPs	3 (38%)
v) Implement joint diabetes face-to-face clinic sessions involving non-concordant PWDHRC, primary care clinicians and the Diabetes Specialist Consultant	3 (38%)
v) Implement prompt on-call service with a Diabetes Specialist Consultant	2 (25%)

1.14. Theme 4: Future innovative services

Despite many innovative approaches for future primary care management of PWDHRC (Table 3) suggested by participants stemming from their experience of the DIRAC to address feasibility of delivery and acceptability by stakeholders, there were some challenges.

1.14.1. Innovative approaches

…maybe it will be nice if these people [diabetes specialists] can come to pubs and talk about diabetes and how beer is a bad idea [P3, Indian Male, interview].

I struggle sometimes…My friends' circle don't have the same problems. If there was a place for only diabetics, run by diabetics, I can go there and hear how they are managing [P4_Indian Male_Interview].

1.14.2. Technology facilitates good diabetes management - with small hiccups!

1.14.2.1. Utility of new ECLIPSE database. The EMIS and ECLIPSE systems enabled PCCs to promptly identify PWDHRC. However, the challenges of ECLIPSE (online Table S6) included paucity of training for PCC, keeping familiar post-training and raising awareness in GP practices.

I can easily find the patients who are flagging red alerts [ECLIPSE], contact them and treat them promptly'…I login onto the system at least three times per week…I hope this system will stay [PCC_Participant observation].

ECLIPSE also had challenges:

Each time, you have to log in as it logs you-off after a few minutes if not using it [PCC 3_White Female_Interview].]

1.14.2.2. Finding a way forward: local practice-based service. Both the PWDHRC and PCCs interviewed proposed diverse approaches of managing complex diabetes cases at practice-level (Table 3), minimising referral to secondary care.

When you go to your GP surgery and see a specialist, they can sense if anything is going wrong quicker [P2_White female_Interview].

The hospital is too big and far to go, too much traffic in that area. I prefer this care in my GP practice…. [P6_Indian Female_Interview].

This service also gave the interventionists a feeling of a 'job well done':

If we've made such a drop [HbA1c] we can say ooh we've done right…., we're going to give this patient another 10 years to live… [DSN_Interview].

1.14.2.3. Cost implications. However, concerns of the financial cost to individual practices, if not centrally funded by the commissioners were expressed by some participants.

These consultant clinics are good for the patients and my time well spent; if I was to pay for them, I'll have to think again…. [PCC_Participant observation].

2. Discussion

This QUAL-ECLIPSE study sought the perceptions of PWDHRC, PCCs and diabetes specialists (interventionists) on the specialist-led Diabetes Clinics in deprived inner-city areas of Coventry. The feasibility of delivery and acceptability of this service was evident from all participants e.g., in minimising treatment delay for the PWDHRC and identifying early warning signs. Cultural sensitivity was expressed frequently as excellent by PWDHRC likely due to the experience of clinicians working in the inner city. However, the sustainability of managing PWDHRC with this model of care was sometimes challenged, mainly because of perceived excess cost. The successful digital risk stratification and implementation of good care, according to participants, supports its continued relevance in the current context of rapid, post-COVID-19 pandemic digital implementation [26–28]. However, digitisation during the pandemic was often at pace with limited quality and equality impact assessments; there is a need to re-ground digital approaches, considering our findings.

Three themes (supporting an ever-changing patient pathway, patient focussed care, learning from each other) suggest the primary care intervention is feasible and holds many advantages of a care pathway in primary care [29]. Like other conditions, the diabetes patient pathway does not always run smoothly may be somewhat labyrinthine [30]; nevertheless, throughout the pathway, the PWDHRC felt empowered to self-manage their chronic condition. The intervention provided a structure for care and some stability in this ever-changing pathway.

Cultural beliefs were addressed, contributing to PWDHRCs feeling empowered to self-manage and receiving 'a good deal'. These findings are akin to those in a previous review of culturally sensitive interventions [31] and adopted as an international standard of care [32].

The three pillars of diabetes care: self-management, patient empowerment, and lifestyle modification [33] were encouraged by DIRAC clinics. The motivation for PWDHRC to change lifestyle was seen during the intervention, a feature not generally found where self-determination is low [34].

PCCs appreciated specialist help in managing their PWDHRC, due to the complexity of care, affirmed by best practice guidance in England [35]. The majority trial participants interviewed, would prefer this service as routine care, concurring with a care closer to home scheme which enabled engagement of PWD and delivered organisational and patient outcome benefits, long term [36]. Furthermore, diabetes-related care outcomes improve in primary care settings when patients are systematically engaged in decision-making and these are acted upon [37, 38].

The study ended in August 2018 and has already changed diabetes service delivery locally. One recommendation stemming from our qualitative findings, namely PWDHRCs wished their care nearer to home, the secondary diabetes team at the local NHS Trust implemented a 3-weekly Consultant-led diabetes clinic in the community. This service is run by three diabetes specialist consultants, working alongside the community diabetes nursing team to review and treat PWDHRCs (both face-to-face and virtually), thereby minimising patients' referral to hospital.

Table 4
Recommendations Stemming from QUAL-ECLIPSE.

1	Implement a specialist-led Virtual Diabetes Community Service to support primary care clinicians to minimise delay treatment of PWD at high risk of developing complications and ensure prompt and effective implementation of care.
2.	Make the findings public to inform practice, service planning and policy development, in order that this model of digitization can be implemented in deprived or underserved areas.
3.	Undertake further research e.g., a full service evaluation or a randomised control trial with an embedded cost-effectiveness analysis of this service.
4.	Create walk-in or community centres run by an expert patient with diabetes where PWD can ease access (either face-to-face or virtually) for psychological or emotional support.
5.	Integrate ECLIPSE database with EMIS database and roll out to all local GP practices.
6.	Ensure support (in particular, digital) recognise that PWD are on a journey and cultural factors should be aligned to its implementation. Therefore, digital interventions should be tested first in deprived populations.
7.	Ensure health Apps and digital solutions are integrated within existing diabetes care pathways to enhance remote consultations post-COVID-19 pandemic.
8.	Train primary care clinicians with special interest in diabetes on important and directly related skills e.g., insulin initiation/titration and carbohydrate counting, to ensure prompt management of complex diabetes cases within GP practices.

The NHS Diabetes Digital Programme [39] states that digital technologies can improve patient experience and diabetes-related outcomes to deliver services in a more pragmatic and efficient way. The ECLIPSE database facilitated timely identification of PWDHRC, promptly managed by PCCs alongside multidisciplinary specialists, benefitting PWD and the NHS in the postCOVID19-pandemic digital landscape [40].

Given the data above, the DIRAC clinic is a strong model for the future. We propose a properly powered RCT of DIRAC vs best practice usual care, including cost effectiveness and process evaluations.

3. Limitations

Limitations to the study include one practice withdrawing from the study; a minority of patients failed to engage with PCCs and interventionists notwithstanding efforts to reach them; their valuable experiences of care are not heard. The presence of the observer in DIRACs may also have limited the expressed views of the participants.

4. Conclusion

This DIRAC model of care was overwhelmingly praised by participants. They supported the future commissioning of this service i.e., to enhance individualised patient care and allow clinicians to support each other.

5. Recommendations

We recommend community models of care where specialists alongside primary care clinicians, use digital solutions when caring for PWDHRC in the community (Table 4).

Funding Information

The study was partly funded by Health Education England (HEE).

Declaration of Competing Interest

All authors declared no conflicts of interest.

Acknowledgements

Thank you to all those who helped us realise this study, in particular, members of the Warwick Diabetes Research & Education User Group, who peer reviewed the study protocol, Coventry and Rugby CCG who granted access to the general practices and all the staff from the seven general practices who freely and willingly participated in the study, despite enormous clinical pressures. To the people with diabetes at high risk of complications coping with their diabetes and other demands, the time and energy you gave to the study, is much appreciated. We are also grateful to the feedback received from colleagues when presenting this study at local and regional meetings.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.pcd.2023.10.012.

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