

Final Learning Report - Diabetes and the Barriers to Physical Activity

Diabetes UK and Sport England

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Introduction

Diabetes is the most potentially devastating - and fastest growing - health crisis of our time, requiring ongoing high-quality care and support. Based on current data from Diabetes UK (2019), we now estimate that the number of people with diabetes in the UK has risen to 4.7 million people. Of these, 3.8 million have been diagnosed with the condition; around a further 1 million have undiagnosed diabetes. Every two minutes someone learns that they have diabetes. Diabetes currently affects more people than all cancers and dementia combined. By 2025 it is estimated that the condition will affect more than 5 million people.

The 65% increase in cases of Type 2 diabetes in the last 10 years has been driven by the nation's expanding waistline. This obesity crisis impacts on the health of people with all types of diabetes, making their long-term condition harder to manage. We can help prevent Type 2 diabetes, both through individual behaviour-change initiatives, and through national measures, like reducing sugar and saturated fat in food. There are signs of progress in meeting this challenge, such as the sugar drinks industry levy, part of the government's childhood obesity plan, but more needs to be done. Obesity is responsible for 80 to 85% of someone's risk of developing Type 2 diabetes and more than half of all cases of Type 2 diabetes could be prevented or delayed.

Diabetes UK welcomes the opportunity to work with Sport England to tackle the diabetes crisis by discovering new ways in which we can jointly improve health outcomes for people living with or at risk of diabetes. A focus on physical activity (PA) as a route to both prevent diabetes, and to help people to better manage their condition, is a strategic priority for Diabetes UK. The priorities of our current strategy resonate with some of the key priorities of Sport England's current strategy, *Towards an Active Nation* (Sport England, 2016). In particular, we are keen to support Sport England to achieve the goal of encouraging more inactive people to become active.

Diabetes UK's current role in the physical activity space

We recognise the role that physical activity can play in delivering two key pillars of our strategy: firstly, physical activity can help people at risk of Type 2 diabetes to reduce their risk; secondly, physical activity can help people with diabetes to better manage their condition, and to help delay the onset of complications as a result of their diabetes, which can include strokes, sight loss, amputations, heart disease, kidney disease, and mental health problems such as depression. We also recognise that we are seen by many as a trusted source of advice, which provides an opportunity for us to make a significant impact in this area.

At present, Diabetes UK offers some support and advice in relation to how physical activity can help people to reduce their risk of developing Type 2 diabetes, or to manage their diabetes better (whether this be Type 1 and 2). Our current advice and support includes:

- **General advice** about the benefits of physical activity as part of our *Guide to Diabetes*, underpinned by the expertise of our Clinical Care team. Our guidance is available both via our printed materials and online, such as our ‘Learning Zone’ programme;
- **Bespoke physical activity fundraising initiatives**, developed and led by our Community & Events team, including Swim22, Million Step Challenge, and London Bridges (walking challenge);
- **Our partnership with Tesco**, which supports more people to get active;
- **Expertise within our Research and Care teams**, who keep abreast of new findings and research and share this with the wider organisation;
- **Local volunteer Groups**, which provide information and support to people living with or affected by diabetes across local communities. Groups provide a programme of activities to increase people’s knowledge and understanding and to develop new ways to self-manage and live a fulfilling life. The groups encourage people to come together to get active, for example through jogging, walking and/or yoga. Whilst undertaking these physical activity sessions, natural peer support occurs which has a positive impact on both people's physical and emotional well-being;
- **Working in collaboration with the JDRF** (Juvenile Diabetes Research Foundation) and the PEAK/EXTOD programme, designed to upskill teams of healthcare professionals to provide greater guidance to people with Type 1 diabetes about how to manage their condition whilst taking part in exercise at varying different levels.

However, before we develop any of these ideas further, or create new initiatives, we need to better understand the existing evidence base and gaps in our knowledge in relation to what works in helping people with or at risk of diabetes to engage in physical activity to improve their long-term health outcomes.

Project purpose

This 12-month project seeks to match Diabetes UK’s nutritional expertise with PA and behaviour change knowledge, tools and programmes for people living with diabetes and those at risk of Type 2 diabetes. By incorporating behaviour change principles, Diabetes UK envisages being able to advertise and direct the least active members of the community to move more in the long term.

The 12-month project seeks to answer the following research questions:

1. What are the barriers that prevent people with diabetes and those at risk of Type 2 diabetes from becoming more physically active?
2. What are the drivers in motivating people to move more?
3. What resources and tools help to overcome the barriers?
4. What can Diabetes UK do to help people to be more physically active?

5. How can others (including healthcare professionals) support you to move more and what might that support look like?
6. What do healthcare professionals perceive as the barriers service users (people with diabetes and those at risk of Type 2 diabetes) face when increasing their level of activity?
7. What do healthcare professionals perceive as the motivators for service users (people with diabetes and those at risk of Type 2 diabetes) to increase levels of physical activity?
8. What are the barriers preventing healthcare professionals from educating people about physical activity?
9. What tools and resources do healthcare professionals need in order to adequately support people to move more?
10. What are the most opportune points in patient pathway to discuss physical activity?
11. What can Diabetes UK do to help healthcare professionals in supporting service users to move more?

This Final Learning Report is the analysis and synthesis of all work/methods used to generate required insight. It will also offer recommendations for future practice.

For this report, the terms physical activity, exercise, keeping fit, less sedentary and being active will be used synonymously.

Brief Summary of all Methodology used

- Literature Review-completed December 2018.
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- Consultancy reports (x2) by:

1: Sheffield Hallam University.

Three different focus groups. Number of participants-people with diabetes (PWD)
Type 1: 15, Type 2: 16, Healthcare professionals (HCPs): 16.

2: Brunel University.

Three different focus groups. Number of participants-PWD Type 1: 12, Type 2: 13,
HCPs: 16.

- Online surveys (x2) completed by:

1: People with diabetes (PWD). Total respondents: 934.

2: Healthcare professionals (HCP). Total respondents: 38.

- Interviews with PWD: over 200 people at 15 local groups, HCPs and other organisations, such as GP referral schemes.
-

- Attendance at other events-anecdotal evidence.

For example, Diabetes UK Professional Conference (DUKPC) for 4 days with a Primary Care presentation, British Association for Cardiovascular Prevention and Rehabilitation (BACPR) Conference with a poster presentation, Exercise for Type 1 Diabetes (EXTOD) Conference, London Marathon Diabetes UK stand, Swansea Half Marathon Diabetes UK stand, London Bridges Walk Diabetes UK stand, Elevate Conference, Vitality event (the world's largest behaviour change study on exercise), a Twitter account for diabetes discussion only.

Both the consultancy reports and online surveys were analysed independently. There was no pre-requisite themes or expectations shared beforehand. Researchers and analysts were only given the 11 questions set out by Sport England (as shown in the Introduction section) as a guide to what was required. Therefore, the results, and their interpretations, did not contain bias from the Diabetes UK project lead or other methodology results.

Literature Review - Summary of key findings

The full Literature Review can be found in Appendix 1. The following is just a summary of the key findings for those with Type 1 diabetes, those with and at risk of Type 2 diabetes and healthcare professionals.

Summary – People living with Type 1 diabetes

- The biggest barrier preventing people with T1D from becoming more physically active is the fear of hypoglycaemia. Equally, this is the principal anxiety that parents have for their children being physically active.
- Good blood glucose management often leads to the ability to better cope with other long-term conditions. As well, it reduces other barriers to doing PA.
- Education for people with T1D (and their families) around exercise and diabetes management is needed. This includes the health benefits of PA and hypoglycaemic management. This education improves self-efficacy, which will help sustain behaviour change. This is most effective delivered on a one-to-one basis rather than in a group environment.
- Programmes should be individualised and goal-based strategies for increasing PA are more beneficial than competition-based ones.
- Support, encouragement and active involvement from HCPs and family are a major factor in increasing PA.
- People with T1D and their families trust and enact the advice of HCPs. They also look to them as role models.
- People with T1D and their families often lack information around PA and diabetes (management) from HCPs. They are not given consistent advice or support regarding PA. This is because HCPs do not feel adequately trained in PA. Specialist PA advisors in diabetes clinics have been recommended as a result.

There are many barriers, motivators and facilitators for people with T1D that are similar to those with other long-term conditions, as well as the general public. These consist of:

- Barriers: work schedule and time; access to facilities (cost and distance); low fitness level; embarrassment (body image and fear of failure); lack of motivation; bad weather; psychological.
- Motivators: enjoyment, especially with active friends and family; health benefits; body image; social aspects/interaction.

- Facilitators: support and encouragement; advice and information; better time management; free/reduced admission to gyms and pools.

Summary – People living with and at risk of Type 2 diabetes

- People with and at risk of T2D often **know** the importance of PA and its health benefits, although some of the BAME population may need more education on this. The biggest barriers were **how** to be physically active (e.g., lack of professional guidance) and **when/where** to exercise (e.g., poor access to facilities).
- People with and at risk of T2D are more likely to be physically active if HCPs prescribe and monitor PA. HCPs in general, know of the importance of PA and its health benefits for those with and at risk of T2D. However, HCPs require appropriate training to identify each patient's PA habits at a personal level and tailor PA to meet individual needs. HCPs report that they do not have enough time in their daily practice to discuss PA. Therefore, PA and diabetes guidelines for HCPs are needed.
- Motivational interviewing by exercise professionals and HCPs would be advantageous as motivation is key to increasing an individual's PA level. Although there are different and complex types of motivation, with intrinsic motivation being the most prominent for PA adherence. Improving a person's self-efficacy will improve their motivation. Counselling skills and behaviour change knowledge would also be beneficial. This is underpinned by the theoretical concepts of Social Cognitive Theory and Self-Determination Theory.
- A key barrier to PA is lack of social support, especially in females. There is a desire for a social community and social interaction. Team sports appear to be best at motivating older men and universally, group- and peer-based PA programmes are most effective. As are centre-based programmes rather than home-based programmes.
- Pedometers were found to be a useful motivation tool, but less so for older people who may require additional support when using them.
- Walking was the most popular form of PA.
- Major barriers to PA were: illness/injury (including reduced mobility); weak physical condition and having comorbidities; and poor weather.
- A key enabler to PA, especially for BAME populations (females in particular), is having 'safe' environments to exercise in.

- Fear of hypoglycaemia was not a significant barrier to PA for people with T2D.

Summary - Healthcare professionals

- HCPs are the primary source of information concerning healthy lifestyle decisions for patients with diabetes.
- HCPs knew they had a role in promoting and managing PA, but often lacked confidence in their PA knowledge and were inadequately trained in delivering such guidance. Other barriers consisted of: time constraints; lack of standard protocols; lack of financial incentive; their own interests and health behaviours; and difficulty converting PA advice in to an easy to understand format.
- Patients claimed that discussion with HCPs regarding PA was marginal. The guidance was also non-specific and vague. There was a perceived absence of encouragement and interest from HCPs around PA.
- It is possible to provide professional education to HCPs on how to promote PA in a well-respected way so that it is adopted by the HCP community.
- HCPs would also benefit from having a network of specialist professionals in PA for patients with diabetes.
- The advocacy of PA is more convincing coming from a HCP who is physically active. They would be more likely to understand patients' barriers and motivators to PA. Furthermore, the less barriers that GPs have to exercise themselves and to promoting PA, the more likely their patients are to be physically active. They can act as role models.
- HCP's attitudes around PA fall in to four themes of relevance: perceived threat, perceived benefit, perceived barriers and perceived self-efficacy.
- Cultural norms influence HCP practice around exercise promotion.
- HCPs perceived parental support as having a significant impact on children's PA participation, in particular parents' emotional and logistical support.
- HCPs perceived schools as having a key part to play in promoting PA.
- Counselling interventions dedicated solely on PA were much more effective in promoting PA than those focused on addressing multiple lifestyle behaviours.
- Walking was found to be a popular form of PA. Walking with a dog is an achievable and more significantly, sustainable form of exercise. Therefore,

HCPs could ask patients about pet preferences and similar interests that promote sustainable PA.

Sheffield Hallam University Consultancy - Summary of key findings

The following text is a summary of the key findings by Sheffield Hallam University in their study of the three focus groups. Text has been directly copied as much as possible. The full consultancy report can be viewed in Appendix 2.

The infographic on the following page presents an overview of the barriers, opportunities, recommendations and the suggested priorities for Diabetes UK offered by the research team.

The findings from this qualitative inquiry serve to support and strengthen the existing evidence base demonstrating the barriers and facilitators to physical activity among people living with diabetes. Resource should now be focussed on responding to the needs of people living with diabetes and supporters/healthcare professionals. Perhaps it is time for a new approach and we have made some suggestions, including; training healthcare professionals, implementing a new physical activity specialist role in the diabetes team, training gym/fitness instructors, improving the profile of existing resources and building upon community assets. Overall the findings imply the potential value of taking an asset-based, solution focused, value driven approach to supporting physical activity among people living with diabetes.

Keeping active with diabetes



TYPE 1 DIABETES

Barriers

- The 'constant threat of hypos'
- Lack of awareness among others
- Physical activity advice lacking in current clinical care
- Other barriers like pain, injury, cost, access and time

Opportunities

PUMP GOALS
 ROLEMODEL
 FREEACTIVITY
 ENCOURAGEMENT
 FREESTYLELIBRE
 MENTALSTRENGTH
 HYPOAWARENESS
 ACTIVETRAVEL
 TECHNOLOGY CGM
 EDUCATION
 ROUTINE
 DAFNE

Recommendations

- Intensive, individually tailored period of support
- Specialist training for gym/fitness instructors
- Discounted gym memberships and entry fees



TYPE 2 DIABETES

Barriers

- Time pressures and other commitments
- Lack of motivation
- Low mood, fatigue and negative feelings
- Limited physical activity support from the healthcare team
- Other barriers like cost, access and language

Opportunities

GOALS
 DESMOND
 PARKRUN
 COUCHTOSK
 HOME-BASED
 ENCOURAGEMENT
 MOVEMENTBREAKS
 INSPIRATIONDOG
 ENDORPHINS DIET
 Pedometer
 INTERNET
 COMPANY
 FITBIT

Recommendations

- Workplace initiatives to promote physical activity
- Increased availability and accessibility of local activities and services
- Individually tailored physical activity programme / App



SUPPORTERS / HEALTH PROFESSIONALS

Barriers

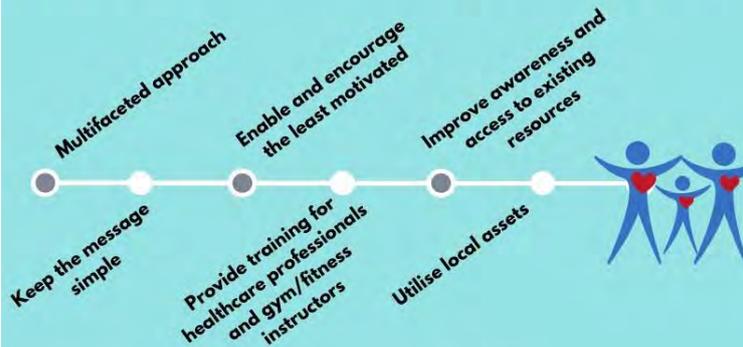
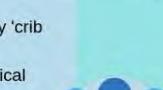
- Lack of capacity to give the support needed
- Personal value of physical activity, confidence and communication skills
- Barriers faced by their patients/clients such as cost, motivation and understanding

Opportunities

LOCALSERVICES
 CASESTUDIES
 DESMOND
 PARKRUN
 TRAINING
 REFERRALTIME
 MOVINGFORRESOURCES
 ONLINERESOURCES
 COMMUNICATION
 NCSEMCLINICS

Recommendations

- Training for healthcare professionals
- Physical activity 'crib sheet'
- Specialist physical activity services in the NHS
- Campaigns and communication about keeping active



CREATED BY DR HELEN QUIRK, SHEFFIELD HALLAM UNIVERSITY
 using www.canva.com - as part of a project funded by Diabetes UK

Suggested priorities for Diabetes UK (and therefore Sport England)

These are our suggestions for Diabetes UK based on the evidence collected in this qualitative inquiry. We acknowledge that viability of these suggestions will be dependent on available resource.

- **Implement a multifaceted approach**

‘Demedicalise’ physical activity for people living with diabetes by working with:

- individuals in a person-centred way
- families and encouraging sustainable lifestyle changes across key health behaviours (diet, sleep, movement)
- communities to utilise and build upon existing local assets
- physical activity providers and services to improve access and uptake
- workplaces to change policy to encourage employers to invest in their employees’ health

Consider Sheffield's NCSEM and MoveMore strategy as an exemplar model

- **Enable and encourage people and healthcare professionals**

Enable physical activity by creating the infrastructure and supportive environment (e.g., healthcare professional training, resources, referral pathways)

Invest in those who are lower in activation or motivation to change. Look not only at the quantity of motivation (i.e., motivated or not), but consider the quality of motivation (intrinsic/extrinsic) (Sebire et al., 2018)

Promote person-centred care to encourage autonomy and empower people to make changes for themselves

Consider taking learnings from *patient activation* and *motivational interviewing*

- **Change the dialogue: Keep it simple**

Support people to understand what constitutes an active lifestyle and encourage small but meaningful changes to their existing lifestyle

Explore the wider lifestyle challenges for people living with diabetes –e.g., difficulties faced doing everyday tasks like housework

Keep it simple – ‘exercise’ can be overwhelming and cause people to disengage

Develop a ‘can-do’ approach to physical activity promotion - rather than it being perceived as a problem

Ensure recommendations to reduce prolonged sitting are a valued part of physical activity promotion
Ensure the message is consistent across healthcare professionals and other resources

- **Provide healthcare professionals and gym instructors with the toolkit**

Train and equip healthcare professionals (pre- and post-qualification) with the knowledge, confidence and opportunity to promote physical activity

Acknowledge/incentivise training with qualifications and CPD points

Create a new role within the clinical team for a physical activity specialist (for an example, see Leeds Lifestyle Practitioner role)

Embed physical activity into routine appointments and develop a standardised "crib sheet" for type 2 diabetes

Train gym/fitness instructors to equip them with the relevant expertise to work with people living with diabetes

- **Improve awareness of and access to existing resources**

Where resources already exist, but are not being used, it is important to understand why. It may be important to explore:

- the criteria for technologies like Lifestyle Libre and how to improve access for people living with type 1 diabetes
- the cultural appropriateness of the information and services
- the need to ensure that resources are translated into different languages – with attention to different dialects
- the time dedicated to physical activity in the DESMOND/DAFNE courses and whether these courses are available to all communities

- **Build upon community assets**

If the provision is already there, don't reinvent the wheel, but instead:

- explore healthcare professionals' awareness of what is available in the local community
- establish a database of available providers/services, keep it up to date and make it easy for people to use
- work closely with community champions to ensure that services are appropriate
- establish and promote the use of physical activity referral schemes (for an example, see Sheffield Physical Activity Referral Scheme SPARS)
- monitor and evaluate the impact of referral schemes and use of local services

Finally

Resource should now be focussed on responding to the needs of people living with diabetes and supporters/healthcare professionals. Perhaps it is time for a new approach and we have made some suggestions for these in Section 10, including; training for healthcare professionals, a new physical activity specialist role in the diabetes team, training for gym/fitness instructors, improving awareness of and access to existing resources and building upon community assets.

To summarise, we have suggested that Diabetes UK prioritise a multifaceted approach that looks beyond individuals, but at the bigger picture; families, communities and workplaces. We recommend that resource might be better focussed on understanding people's motivation or activation and that a person-centred approach to understanding the wider lifestyle challenges for these people and how to support autonomy in their self-management might be beneficial. We suggest that keeping the dialogue simple might help people adopt a 'can-do' approach, moving away from a 'you ought to do more exercise' model, to thinking about how physical activity can be embedded into everyday life. Fundamental to this solution-focused, value-driven approach working is the need for training of healthcare professionals or establishing a new role within the diabetes team whose focus would be on advising on physical activity, providing intensive, individually tailored support and referring to local or home-based physical activity opportunities. We believe this might take the pressure of healthcare professionals and the current need to 'make every contact count'. We also emphasise the need not to recreate the wheel and instead fund and increase the profile of the services and provision already available in the community. Utilising local assets and bringing it all together under one key point of reference would streamline the referrals to community physical activity programmes. Finally, having a workforce of trained gym/fitness instructors on the 'frontline' delivering the physical activities may address some of the barriers experienced by healthcare professionals and people living with diabetes.

Brunel University Consultancy - Summary of key findings

The following text is a summary of the key findings by Brunel University in their study of the three focus groups. Text has been directly copied as much as possible. The full consultancy report can be viewed in Appendix 3.

Barriers that prevent people living with diabetes from becoming more physically active

Barriers to physical activity identified in this project by people living with diabetes and healthcare professionals included: the negative psychological impact of being diagnosed with diabetes, a lack of knowledge about physical activity and the benefits of a physically active lifestyle, limited opportunities for physical activity, fear of hypoglycaemia, a focus on weight loss and diet advice, and wider challenges of living with a chronic health condition including additional health problems.

Drivers motivating people living with diabetes to become more physically active

The drivers motivating people living with diabetes to become more physically active were identified in this study as: accepting diagnosis and taking control over the management of diabetes and having access to physical activity services tailored to peoples' needs and desires and supportive of those diagnosed with diabetes.

Resources and tools to help people living with diabetes to overcome the barriers to physical activity

Resources and tools suggested as ways of helping people living with diabetes to overcome the barriers to physical activity included: accurate and effective sources of information about the role of physical activity in diabetes management, knowledge exchange between healthcare and physical activity professionals to develop effective provision and referral strategies, preparing for hypoglycaemia during exercise and accessing technological advances in the management of diabetes but also in communication and monitoring strategies for physical activity.

The role of Diabetes UK in supporting people to become more physically active

Diabetes UK has a role to play in supporting people to become more physically active including: working with GP services more effectively for knowledge exchange and promotion of physical activity, promoting community services for physical activity, ensuring person-centred approaches to physical activity prescription and promotion and increasing awareness of the benefits of, services for and management of diabetes through physical activity.

How others can support people living with diabetes to become more physically active

A network of people including medical experts, healthcare professionals, physical activity specialists and friends and family can support people living with diabetes to become more physically active. Such support can include concise and accurate information about the role of physical activity in diabetes management, continuity of care for those living with diabetes, holistic guidance on physical activity, tailored and targeted physical activity services and training for physical activity specialists in the contribution of physical activity diabetes management.

Conclusions and recommendations

Taking part in regular physical activity can help people living with diabetes to manage their condition as well as reduce the risk of Type 2 diabetes in the population more broadly. The findings of this study identify that people living with diabetes can find it challenging to become more physically active. In this study, barriers to physical activity included the negative impact of diagnosis, lack of knowledge about physical activity, limited opportunities for physical activity, fear of hypoglycaemia and a focus on weight loss and diet in the management of the diabetes. Participants in the study did recognise the benefits of physical activity and wished to be more physically active. Accepting their diagnosis and taking control of managing the condition, alongside the provision of tailored and supported physical activity were identified as significant in motivating people living with diabetes to move more. Resources and tools for helping people living with diabetes become more active included the development of mechanisms for knowledge exchange about physical activity benefits and services, preparing for hypoglycaemia and access to technological advances for diabetes management and care. In addition, our findings illustrate the importance of developing and maintaining effective communication between medical and community services to support those living with diabetes to lead active lifestyles and ensuring access to accurate information about, and high-quality tailored physical activity services.

We present five recommendations that can inform policy and practice in the area of physical activity prescription and promotion for diabetes management and prevention.

1: Partnership working between community physical activity and medical services and those living with diabetes

There is scope to develop partnerships between medical services for diabetes management and care in GP practices and hospital settings and community organisations delivering physical activity. There is a role for community sport and physical activity organisations in supporting the strategies of clinical commissioning groups by being involved in decision making about physical activity programmes for those living with diabetes.

2: Physical activity pathways embedded into existing diabetes management strategies

Diabetes management is framed by established care pathways including a range of medical and healthcare professionals. Existing diabetes care pathways could be employed as a mechanism for ensuring exchange of information about physical activity and could provide a pathway for those living with diabetes to engage in community services.

3: Tailored and targeted physical activity provision

Taking part in regular and sustained physical activity is more likely if provision is tailored to the needs and wants of targeted groups of people living with different types of diabetes. Physical activity specialists have a role to play in designing and implementing physical activity that meets the needs of those living with diabetes. Best practice in designing and delivering physical activity should involve co-design approaches that involve all relevant stakeholders in the diabetes care pathway including those living with diabetes themselves.

4: Accurate messaging about physical activity and diabetes

Healthcare professionals and physical activity specialists have a role to play in ensuring that accurate messages about diabetes and physical activity are available to those living with the condition. There is scope to develop concise, accurate and accessible information that recognises difference and diversity in types of diabetes and is socio-culturally sensitive in the prescription and promotion of physical activity.

5: Training about diabetes and the role of physical activity for physical activity specialists

Physical activity provision takes place in established and regulated community settings and is delivered by highly skilled, knowledgeable and qualified experts. There is potential for physical activity specialists including community sports coaches, walk leaders, dance and exercise instructors to target, recruit and support people living with diabetes to be physically active if they are trained to understand diabetes and the role of physical activity. Physical activity specialists can potentially provide a community ambassador role for raising physical activity levels amongst those living with diabetes.

Online Surveys

The methodology and full results can be viewed in Appendix 4. The following text are the major themes and recommendations after examination of the quantitative information and content analysis of the qualitative data.

Key Themes – People living with diabetes, people at risk of Type 2 diabetes and parents and carers

Diabetes UK to...

- Provide advice on
 - General fitness and exercise
 - Managing diabetes when being physically active
- Provide information about what physical activity we could be doing and signpost us to where we can do it
 - Suggestions of physical activity
 - Support with adapted exercise, not just generic advice
 - Signpost us to where we can do physical activity in our local area
- Provide support and encouragement to increase people's physical activity
- Support us to meet and exercise with other people that are in a similar situation to us
- Ensure that professionals have the appropriate knowledge of diabetes and exercise to provide safe and accurate support and advice
 - Healthcare professionals
 - Physical activity leaders
- Improve the accessibility of services and facilities to exercise and be physically active
 - Reducing the cost of being physically active
 - Improving the accessibility and availability of activities

Provide advice

General fitness and exercise

Diabetes UK providing advice was a clear theme coming from the comments left. This was often, a general comment about the need for advice about fitness and exercise, with some highlighting the need for honest advice about potential complications and difficulties that may occur when exercising with diabetes.

Managing diabetes when being physically active

Although many comments left were requesting general advice, a lot of people indicated wanting advice on managing their diabetes whilst exercising. This included how to manage blood glucose levels, before, during and after different types of exercises and managing the fear of hypos and treating them effectively. One suggestion was having targeted education programmes specifically on diabetes control and exercise.

Providing advice on diet, including specifically in relation to exercise, was also mentioned on a number of occasions.

Providing advice on managing diabetes and exercise as well as diet and food, also came through from the comments left by parents and carers of people living with diabetes.

Provide information on what activity we can be doing and signpost us to where we can do it

Suggestions of physical activity

People reported wanting information and suggestions of different ideas (e.g. on the website) of what they could be doing to increase their physical activity level and more so, for some, the best and most beneficial physical activity they could be doing.

Some people were more specific in wanting ideas of exercise for certain ages, for their type of diabetes or very low physical activity levels.

This was echoed by parents and carers as they highlighted advice about different types of activity and what other people were doing to be physically active would be useful.

Support with adapted exercise, not just generic advice

For many, a barrier to not being more physically active, was other physical limitations, whilst others expressed they were unable to be physically active. It was clear, that general generic physical activity advice and suggestions wouldn't be appropriate or enough for many and advice on adapted exercise was welcomed. Providing advice on exercise that can be done within the home (including through an app) was suggested, as well as specific advice for people exercising with diabetes complications or other co-morbidities and physical limitations in addition to diabetes. For example, sitting exercises.

Provide information on what activity we can be doing and signpost us to where we can do it

Signpost us to where we can do physical activity in our local area

In addition to knowing what sort of physical activity they could be doing, a frequently raised request was for Diabetes UK to provide signposting to physical activities and exercise that people can access in their local area, including those that are at a low cost.

Providing information of where activity can be done was also raised by parents and carers.

Provide support and encouragement to increase people's physical activity

Motivation was a frequently cited barrier for people not doing more physical exercise and activity, therefore, it was suggested that Diabetes UK have a role to play in providing support and encouragement to people to be more physically active. As suggested, this could be ensuring that information about the benefits of exercise is provided to people with diabetes.

Support and encouragement took on different forms for different people. For some, having support with goal setting (e.g. including exercise plans) and regular check-ins of progress was felt would be beneficial, with some suggesting this could be done through an app. A few people felt that access to a personal trainer would help them to start or continue exercising, whether online or in person.

Others suggested that Diabetes UK provide real life, motivational stories of people with diabetes being physically active. For some, this was showing people with diabetes at a professional level, to motivate and show what level of physical activity can be achieved. For others, this was showing those that have moved from very low level fitness and made progress to improve this.

Within the comments from parents and carers a role of support and motivation was also pointed out, including setting goals, as well as ensuring that when people receive a diagnosis of diabetes, they are encouraged that diabetes does not mean that they cannot exercise. It was also shared that starting people off being physically active at a young age would be of benefit.

Support us to meet and exercise with other people that are in a similar situation to us

A frequent theme from people with diabetes or at risk of Type 2 diabetes was enabling them to meet others that are in a similar situation to them. This included peer support, for example, through meeting and discussing their experiences (both on forums and in person), but for others this was meeting others and exercising together in a group format or a mixture of the two. Some suggested that these group exercise programmes were specific to diabetes generally or their type of diabetes, others mentioned groups of people of a similar fitness level, whilst others indicated groups but not specific about the makeup.

A suggestion that Diabetes UK provide and organise more events was highlighted ensuring that it is clear about ones that people can get involved in.

Providing group sessions where people with diabetes can exercise in this environment was also suggested by one of the parent and carer comments.

Ensure those with responsibility for people with diabetes have appropriate knowledge of diabetes and exercise

Health care professionals

It was occasionally mentioned by people with diabetes or at risk of Type 2 diabetes, that an improvement that could increase their physical activity would be ensuring health care professionals are supportive of patients in their physical activity efforts. Also, that they have the knowledge and resources to be able to provide advice about exercising with diabetes and signpost patients to local services and facilities where they are able to exercise and be physically active.

Physical activity leaders

There was also a suggestion that anyone leading a physical activity or exercise has the relevant knowledge about diabetes, so that the exercise is safe. This was a theme that came particularly with the comments from parents and carers of people living with diabetes.

Improve the accessibility of services and facilities to exercise and be physically active

Reducing the cost of being physically active

A frequent barrier cited for not being more physically active was the cost of doing so and it was often suggested that Diabetes UK either provide or campaign for free or discounted facilities or activities for people living with diabetes. This was also highlighted from one person at risk of Type 2 diabetes, that access to free facilities would be beneficial if disabled.

Supporting local initiatives so that people with long term conditions can participate at a lower cost, also came out from the parents and carers comments.

Improving the accessibility and availability of activities

Not having the time was regularly mentioned as a reason to not being more physically active and in addition to cost, other elements of accessibility and availability of services were frequently mentioned as additional barriers. Issues highlighted include, the need to improve opening hours of facilities, travel to facilities being challenging and the need for adapted facilities and sessions that are appropriate for their physical needs. Related, there was a suggestion of lobbying areas of poor service.

Within the parents and carers comments it was suggested that sessions could be ran at different venues. For example, schools, cinemas and clubs.

Key Themes – Healthcare professionals *

Diabetes UK to...

- Ensure that healthcare professionals have the knowledge, advice and resources available to support their patients in being physically active
 - Produce resources that we can pass on to our patients
 - Increase healthcare professional knowledge

- Signposting to exercise classes and facilities for physical activity
- Improve accessibility to physical activity and exercise facilities
 - Making exercise and physical activity more affordable
 - Support the availability of physical activity groups and events
- Improving access to other professionals to support patients to become more physically active

** Note that themes came from a small number of comments so some caution when reporting*

Ensure that healthcare professionals have the knowledge, advice and resources available to support their patients in being physically active

Produce resources that we can pass to our patients

A number of HCPs suggested that it would be useful for Diabetes UK to produce resources that they can pass on to their patients. This included resources of different formats (leaflets, website information, app) and of various themes surrounding diabetes and exercise including suggestions of physical activity, the physical and emotional benefits of physical activity and the impact of medication, for example insulin on physical activity. It was also highlighted by some that this should be tailored, for example for different physical abilities, ages, types of diabetes and for people with mental health difficulties or learning difficulties.

Increase Healthcare professional knowledge

A couple of comments identified a need for increasing HCPs own knowledge so they are better placed to support their patients with diabetes to be more physically active. This included education to be more holistic in their approach and specific education and advice around how to help with aspects of exercising with diabetes including insulin management and diet.

Signposting to exercise classes and facilities for physical activity

Being able to signpost patients to local classes and facilities was important. This for some was Diabetes UK signposting people themselves, and for others was ensuring that there is signposting information available that HCPs can use to pass on to their patients.

Improve accessibility to physical activity and exercise facilities

Making exercise and physical activity more affordable

A suggestion that came up by healthcare professionals that would support them to help their patients in being more physically active, was by making exercise and physical activity more affordable. One suggestion on how to do this was for Diabetes UK to campaign for free or reduced gym or facilities.

Support the availability of local physical activity groups and events

A further role for Diabetes UK in increasing the accessibility was supporting local physical activity groups and events. For some, this was Diabetes UK running and providing their own exercise and activity groups, for example ran by volunteers. Similarly, Diabetes UK providing more events was suggested.

Others, felt that there was a role in Diabetes UK supporting other national physical activity programmes. For example, health walks or Parkrun.

It was also highlighted by one healthcare professional that there was a role in the charity promoting physical activity as a positive change.

Improving access to other professionals to support patients to become more physically active

A couple of healthcare professionals mentioned that patients having access to other professionals' advice and support would be beneficial to HCPs when trying to help people with diabetes or at risk of Type 2 diabetes to be more physically active. One HCP mentioned having psychological support within the MDT would be beneficial, due to mental health difficulties. For example, depression being a barrier for physical activity. Another suggested making a physical activity coordinator available in waiting rooms for all patients.

Interviews with People with Diabetes (PWD) and other relevant organisations

Semi-structured interviews were completed. The 5 base questions were:

1. What are the barriers that prevent people with diabetes and those at risk of Type 2 diabetes from becoming more physically active?
2. What are the drivers in motivating people to move more?
3. What resources and tools help to overcome the barriers?
4. What can Diabetes UK do to help people to be more physically active?
5. How can others (including healthcare professionals) support you to move more and what might that support look like?

Those interviewed were spread around the UK and included people with T1D, T2D, those at risk of T2D and parents/carers of people with diabetes. Both sexes were represented as well as all age brackets over 18 (18-29, 30-39, and so on). The current physical activity (PA) levels of individuals also varied from those that were inactive, fairly active and active. Those interviewed were asked to fill in a form detailing their background. See Appendix 5 for the template used.

The groups interviewed breaks down as:

- Around 200 people across 15 diabetes groups. One of these was a group just for parents/carers of children with diabetes.
- 2 in-depth interviews with 2 people with T1D.
- 2 interviews with exercise referral scheme managers.
- 1 interview with a council Health Improvement Manager for PA and long-term conditions, who also has T1D.

Key Findings from the diabetes groups and individuals

The most common finding from all the groups was that those with diabetes are more likely to be physically active, or actually start to be active, if supported by other PWD or those with long-term conditions (LTCs). This support and encouragement primarily came from local diabetes groups (that were interviewed). It was claimed that PWD learn more about exercise and diabetes from their peers in these groups, than from HCPs. There was also a feeling of camaraderie and fellow understanding/empathy. Many of the participants felt diabetes groups gave them the confidence to discuss mental health issues that they have, such as depression, which they struggle to do in a HCP setting. For reasons such as time constraints. Many felt that they were alone in having mental health problems, until hearing that most others in the group were having, or had previously had, similar concerns. This relates to PA as it often needs to be addressed before PWD will consider being active. PA is simply not a priority if people are suffering from other problems. However, those that started to be active reported that they felt a lot better mentally, physically, and in general. The links between physical and mental health are

significant as individuals stated that psychological input from HCPs was either limited or non-existent, yet the majority had suffered from depression at some point. It was noted that once you become more active, you are more likely to improve other health aspects, such as diet, smoking, alcohol and attendance of healthcare appointments. Similarly, improving other health attributes can lead to an increase in PA. This is due to behaviour change aspects such as capability, opportunity and motivation. As discussed, being physically active within a group of peers, such as with other PWD, is a significant motivator. This social interaction provides a platform for people to share ideas, success stories and problems around diabetes (especially exercise focussed). There is mutual understanding and this can be amplified if group members are of a similar ability and/or fitness level. Participants can also learn more about their condition, leading to better self-management. This is often through trial and error. This only really happens if individuals are with other PWD or similar LTCs. It was also mentioned that those with T1D were less worried about having a hypo if being physically active with other people with T1D.

The most popular PA was walking, whether that be joining a walking group or a walk to the shops, to work, or around a park. Walking in general was often highlighted by those that were (fairly) active as being a healthier alternative to taking public transport. Walking groups seemed to be most effective when different levels of walks were offered, i.e., shorter beginner to more advanced ones, using a variety of routes. Those new to exercise found walking an accessible option and something that could be used as a 'stepping stone' to further PA. No experience was needed, or specialist kit and equipment, or payment. Furthermore, it was asserted that wheelchair users also enjoyed the walking groups, for the same reasons previously given, along with the fresh air and green scenery.

Another well-liked club to join that can also be done individually, and makes you physically active was gardening. These groups can also promote healthy eating by growing fruit and vegetables. Moreover, allotments and gardening clubs can be found in most areas.

A major factor for people joining PA clubs was venue location. It was often reported that clubs need to be close by and easy to get to. A large number of older people claimed that activities had to be on a bus route or have transport provided for them. Some also claimed that they would avoid areas that did not have benches or streetlights. This included parks with family, if there was nowhere to sit for a break and to socialise. Poor pavement condition was also a big restriction as people were scared to walk on them, especially in bad weather. This was prominent with walking groups in rural areas. Having accessible public toilets was also a 'deal breaker' for a considerable number of those interviewed. Many locations did not have toilets or they were insufficient. For example, inaccessible for the disabled and those with mobility issues-such as being upstairs, required payment, or were not publicised so people did not know where to go.

It was often reported that having a variety of choices was advantageous as there is no 'one-size-fits-all' activity. For example some like gyms because of the social element, where as other find them too busy and overwhelming. Outdoor gyms also

divided opinion. Regular exercisers used them as they were convenient and free to use. Some areas had set planned sessions where groups were together. However, beginners/the inactive did not have any interest in using them as they claimed that they needed instruction on how to use the machines correctly and on how to complete an exercise session/routine. There were also concerns that there were no toilets, lighting, or somewhere secure for your bags.

A popular activity option was chair-based exercise, due to its simplicity and quick set-up. It can also be done for a short period of time, within the home or in groups and can incorporate several fitness aspects, such as balances and flexibility. It was popular with beginners and those with foot and/or other mobility issues. Group classes were more appreciated than at home as per the reasons suggested previously, such as it is more encouraging, social and provides gentle competition.

Sustainability of PA clubs was a theme that got raised. Funding was usually short-term with no realistic plans for when funding/sessions stopped. There was also no continuity with frequent changes in staff. Therefore, links and signposting to other clubs was recommended. In addition, PWD wanted a breakdown of where clubs were happening by area and successful initiatives included 'one-stop shop' schemes where by PA sessions were complemented with HCP input. For example, having foot checks or dietary advice at the same time/venue. The most common signposting channels to (physical) activities were by local Diabetes UK support groups, other charities-such as Age UK, leisure centres, other family members and HCPs-primarily through referral schemes. These referral schemes were highlighted positively as they were from a trusted knowledgeable source and PWD knew they would be supported by qualified empathic staff. This is important as many people stated that they were intimidated by gym staff and general PA workers so would not normally attend. It was felt however, that HCPs needed to promote physical activities and clubs more. It was widely suggested that HCP waiting rooms could advertise local PA groups and suggest simple exercises that can be done. This could be through posters, newsletters or flyers. PWD are often sat there for long periods of time with nothing to read or do. This literature could also be sent to community centres, supermarkets, libraries, and so forth.

However signposting to physical activities was not enough. Many were put off by the attitude of staff in the PA industry regarding diabetes and the lack of awareness in general. Gym staff were often cited as being arrogant of diabetes and the barriers that PWD face. For example, not knowing what to do if someone has a hypo, or if you are feeling depressed due to poor glycaemic management. Having hypo kits at venues would give more confidence to PWD to attend. They are cheap, discrete and easy to administer. It was noted that PA staff need to be more encouraging and showing empathy was an important trait needed. Most PWD already know if they are overweight so dislike being regularly informed of this along with how easy it is to lose weight. This is hugely demotivating. The attitude of teachers was also highlighted, in particular PE teachers, in a negative way. Although it was acknowledged that improvements had been made and were continuing, it was maintained that teachers were unsure of what diabetes entailed and had limited

knowledge of hypoglycaemia. Some were happy to let children with diabetes sit out of PE lessons or gave embarrassing or patronising comments. In schools currently, a chaperone, often a parent or carer, usually has to attend school trips if a child has diabetes. This leads to teaching children a lack of independence. These negative experiences and memories of school PE/sports often led to negative connotations of PA in adult life. With this in mind, it was suggested that the term 'exercise' be replaced by 'being active' to change perceptions.

Other people's perceptions and attitudes was also a common theme reported. A significant number of PWD did not want to let PA staff, or others, know about their diabetes. This is because it was claimed that they would often cause a scene, embarrass or pester. Therefore it was advised that PA professionals needed education on diabetes and how to be empathic. This is important as blood sugar levels can go up or down without warning and can vary doing the same activity. There can be inconsistency, so PA staff need to be understanding. There was also a considerable suggestion from those with T1D that physical activities, exercise programmes and media coverage were overwhelmingly focussed on T2D. This included the public associating T1D and T2D as being the same and generating the same stigma. This leads to frustration from those with T1D and highlights the desire for there to be T1D role models within PA. Stigma is also present and felt within the T2D community as well. Many indicated that there is an obsession with losing weight and poor lifestyle choices. However, it was argued that having T2D is not just about being overweight and that constant criticism (especially if a healthy weight or underweight) around losing weight was demoralising. Therefore, a change in language was recommended, along with more public awareness/education.

This awareness and education, it was proposed, could come from Diabetes UK. There was also a desire for the charity to offer similar for PWD. Those with T1D, T2D and those at risk of T2D all wanted easy-to-read guides on exercise that were non-medicalised. The current Diabetes UK magazines and literature that are uncomplicated were popular as a fun, informative read. However nobody knew of any that covered PA. Another suggestion was to make Diabetes UK's website (for local groups) more user-friendly, with more updates. Conversely, the social media platforms and groups received high praise, although both the website and social media offered little on PA. Therefore, PWD go elsewhere for information on PA, such as the Juvenile Diabetes Research Foundation (JDRF) or to unregulated websites. There is also no signposting by Diabetes UK to doing PA, although Diabetes UK CYMRU were highlighted as being successful by having staff in HCP surgeries and promoting PA and local groups. The Diabetes UK Professional Conference Insider Day was advocated as being useful for improving PA knowledge but more was wanted in fundraising literature, such as tips and general advice for PWD, and where someone can actually exercise. More PA links to other websites was advised, along with PA discounts for Diabetes UK members. Other ideas included a 24-hour helpline, large print on flyers and handouts as sight issues is often overlooked, the need to recognise the excellent work of volunteers more, and better links with councils and others that are running PA projects.

Diabetes UK's support was generally commended and welcomed, with particular acclaim for its diabetes camps. At these camps, parents/carers can also be educated and share stories. They are also seen as being beneficial to the children as their diabetes is normalised and discussion on topics like pumps are useful as some may never have even seen one before. However, some suggested that there needs to be a separation of T1D and T2D events such as at conferences. This is because they are too confusing and irrelevant if you are not the type being discussed. The use of role models was also submitted, with their case studies to be made public. This should also include the downsides of diabetes, such as anxiety, depression and exhaustion from day-to-day considerations. This is because it can be demoralising to only hear the good stories and lets people know that they are not on their own (with their struggles) and can overcome the challenges. The overall request from the interview participants for Diabetes UK and for the HCP realm in making them more physically active was for them to both employ psychologists and PA specialists. It was often claimed that there was no one to discuss PA with in a HCP setting, or that the knowledge present was limited. HCPs were cited as sometimes giving contradictory advice around exercise and not listening to patients' interests and lifestyle, instead just giving text book answers. Staff consistency was also problematic but overall PWD felt that HCPs needed more information and guidance on PA and should be able to signpost people to PA groups and further information on exercise and diabetes. This could be achieved through infographics, flyers and posters at HCP venues.

In general, PWD wanted more information on the benefits of PA, the dangers, and how it relates to diabetes and blood sugar levels. There is a lot of confusion around diabetes and PA that deters PWD from being more active. For example, feelings of frustration and futility in that exercise can cause you to need to eat more, especially carbohydrate if your blood sugar levels lower. Other key barriers to being more active were the fear of hypo, time, embarrassment (of being overweight, body hair, no suitable clothing), no social support, pain, cost and no access to a podiatrist. The latter is important as several PWD wanted to be more active but had foot problems/pain, so would not risk it. A solution given was to have podiatrists at different events. Two other difficulties for PA consisted of a decrease in GP exercise referral schemes and language barriers, especially for those from the BAME community.

Other motivators for being more active not previously mentioned consisted of having a trained and qualified instructor/leader, a befriending service, safety in numbers, looking better and feeling healthier. Personal satisfaction and achievement were also highlighted, with targets, milestones and rewards helping to achieve this. In addition, apps were seen as being a useful tool for PA, along with social media groups. However, face-to-face interaction was alleged to be more beneficial, as it is friendlier, personal and makes you feel like you are being listened to. Finally, structured education courses that gave diabetes lifestyle guidance were rated positively. This included the DAFNE (T1D) and DESMOND (T2D) courses. However, advice on PA was limited and PWD stated that they wanted more information on this.

Key Findings from the exercise referral scheme managers and Health Improvement Manager

Exercise referral schemes were advocated as an excellent method for getting PWD more active. They were seen as being a good first step to PA as PWD get 1:1 support and nudges. This then leads to peer support from the group, where issues can be discussed and social interaction can occur. A key factor for uptake was actually to alleviate social isolation, not to exercise. Walking and water-based activities were the most popular. Programmes were usually for 12 weeks then PWD were signposted to other activities. People were reluctant to attend PA sessions without 1:1 support. To maintain attendance check-up prompts are needed as well as a professional coach to nudge and educate on health and safety and how to exercise progressively.

A problem noted though, was that the professional coaches needed proper diabetes education and training, as did other staff, such as personal trainers. There was an obesity in diabetes course that staff had completed but they still felt inadequate in PA, as nutrition was the main focus of the course. Another idea was that education on PA was also needed for PWD. Referral staff had no literature to give out on PA and diabetes. There was even a scarce amount of material on PA in the NHS England diabetes pack given out during 'diabetes week'. Staff were also unsure where to send PWD for more PA information so often sent them back to their GP for advice. PWD were named as being the most difficult LTC group to get engaged in PA programmes, especially older individuals. Conversely, schemes were said to focus heavily on older people at the exclusion of young people. For example, there are no obesity programmes (in the areas of those interviewed) for the youth to go to.

Other concerns were that council staff did not know where to send PWD who wanted to be active. They also had a limited amount of staff with a trivial budget, but were still contacted frequently by PWD. Furthermore, the public and even some PWD did not know the difference between T1D and T2D including treatment. This can lead to, and be from, mixed messages from the media. Consequently, Diabetes UK could be a trusted source of information on PA, if they had enough suitable content in their reserve. This is important as it was indicated that several PWD do not know the risks involved. For instance, the importance of decent foot care. Similarly, those from the BAME community can underestimate their risk of diabetes if they are either underweight or a healthy weight.

Some recommendations given to get PWD more active were for researchers to conduct more 'on the ground' studies on PA using PWD, to use role models more, and through marketing; highlighting the seriousness of diabetes such as amputations whilst attempting to reduce the stigma. Referral schemes and councils have regular contact with PWD and the community and can act as an intermediary and a promotional tool. However, they need education on, and literature (handouts, posters, etc.), regarding diabetes and PA.

An example of where a referral scheme is currently effective was a LTC voluntary sports club where diabetes specialists would frequently attend to run other courses at the same venue before or after the PA sessions. These courses were separated for T1D and T2D and consisted of topics such as carbohydrate counting, measuring blood sugar levels, weight loss and insulin. The scheme also had a 'buddy system' in place using community health champions. Once individuals were confident with being able to exercise (safely), they would be encouraged to leave the referral activity and join other (usually more advanced) PA clubs, as well as continue on their own. This meant that space would be opened up for a new participant to join, ensuring a continuous flow of PWD who need that initial 'push' and basic introductory guidance.

Conclusions and Key Recommendations

When analysing all of the insight gathered over the past 12 months, the three most common themes concerning PA barriers and motivators were:

- Education, information, training and awareness.
- Support: social and psychological.
- Fear of hypoglycaemia (mainly for T1D).

Education, information, training and awareness

Generally, there was a lack of knowledge for PWD, HCPs and the PA industry (such as instructors and gym staff) about PA and diabetes. Furthermore, some did not know the benefits of a physically active lifestyle or how to safely exercise with diabetes. Another considerable problem was that many PWD did not know where they could be more active with limited signposting to activities by HCPs and others. PWD overwhelmingly wanted information on PA from Diabetes UK as they are seen as a trusted source. HCPs were also perceived as a reliable figure but could be inconsistent or inaccurate with their PA advice. Education courses such as DAFNE and DESMOND were held in high regard, although the PA content was partial. Overall, information was most effective when it was personalised and specific to an individual.

Recommendation

Diabetes UK to substantially improve their content offer on PA. This would be specific to the different audiences of T1D, T2D and those at risk of T2D, parents and carers of PWD, HCPs, and the PA industry; whether that be an advanced coach, personal trainer or a parent helping out a local children's team. Therefore, making information as personalised as possible. This would include general diabetes and exercise knowledge progressing to more advanced learning, tips, advice, suggested exercises and so forth. The more technological options people have, the more likely they are to be engaged. This could include videos, interactive learning, apps, social media forums, a telephone helpline, and hard copy booklet guides. There also needs to be signposting to activities and relevant content, utilising local assets and existing resources. For example, the popularity of parkrun. Diabetes UK can also offer training to HCPs and campaign for specialist PA services in the NHS, raising awareness of PA barriers of PWD at the same time.

Support: social and psychological

Social support was important for PWD. Support and encouragement from family, friends and having significant others accompany them to a PA session helped motivation to continue. Feeling safe during PA around knowledgeable,

understanding friends was also important. People valued ways of connecting socially to others with diabetes without feeling like they are different, special or attending a self-help group. Having an intensive, individually tailored period of support was most effective at getting PWD to start being active. This included having an individual PA programme. However, a considerable barrier to PA was the lack of psychological and podiatry support that PWD felt existed. There needs to be improved access to both of these specialists to increase PA levels.

Recommendation

Whilst continuing to administer existing support mechanisms, such as online forums and local diabetes groups, Diabetes UK could create peer-support exercise groups in diverse (and deprived) areas that have the presence of BAME communities. PWD learn more about their condition at these groups than from HCPs. The most popular activities at similar groups was walking, swimming and chair-based exercises.

Diabetes UK can also increase its support for PWD by improving its PA partnerships. A suggestion would be by uniting with physical activity providers (e.g. parkrun, the FA, GLL, etc.) to offer peer-support based exercise interventions, such as a walking series or diabetes-specific exercise classes.

Both the above proposals could be done initially as a pilot scheme.

Fear of hypoglycaemia (mainly for T1D)

The biggest barrier preventing people with T1D from becoming more physically active was the fear of hypoglycaemia. Equally, this was the principal anxiety that parents had for their children being physically active. This fear was not just fright and anxiety, but also embarrassment and feelings of futility. For instance, the sense that it is pointless to exercise if you then have to consume (more) carbohydrate to counteract a hypo, making PA not worth the risk.

Recommendation

The recommendations already outlined could help reduce this fear. This would be through there being more education and information for PWD, but also training and hypo awareness for those working or volunteering in PA. This can subsequently establish a better environment for PWD to be active in. This better environment can be reinforced further with PA organisations partnering with Diabetes UK to additionally create a safe environment that PWD feel confident to participate in. This could be achieved by the groups all having hypo kits available at their venues and staff trained through CPD in basic diabetes. Diabetes UK could implement this as an accreditation scheme.

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[Appendices](#)

Appendix 1

Literature Review - Diabetes and the Barriers to Physical Activity

Diabetes UK and Sport England

December 2018

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Abbreviations

BAME: Black, Asian and Minority Ethnic

BMI: Body Mass Index

GP: General Practitioner

HCP: Healthcare professional

PA: Physical Activity

T1D: Type 1 diabetes

T2D: Type 2 diabetes

UK: United Kingdom

US: United States

USA: United States of America

Introduction

Diabetes UK welcomes the opportunity to work with Sport England to tackle the diabetes crisis by discovering new ways in which we can jointly improve health outcomes for people living with or at risk of diabetes. A focus on physical activity (PA) as a route to both prevent diabetes, and to help people to better manage their condition, is a strategic priority for Diabetes UK. The priorities of our current strategy resonate with some of the key priorities of Sport England's current strategy, *Towards an Active Nation* (Sport England, 2016).

Project purpose

This 12-month project seeks to match Diabetes UK's nutritional expertise with PA and behaviour change knowledge, tools and programmes for people living with diabetes and those at risk of Type 2 diabetes. By incorporating behaviour change principles, Diabetes UK envisages being able to advertise and direct the least active members of the community to move more in the long term.

The 12-month project seeks to answer the following research questions:

1. What are the barriers that prevent people with diabetes and those at risk of Type 2 diabetes from becoming more physically active?
2. What are the drivers in motivating people to move more?
3. What resources and tools help to overcome the barriers?
4. What can Diabetes UK do to help people to be more physically active?
5. How can others (including healthcare professionals) support you to move more and what might that support look like?
6. What do healthcare professionals perceive as the barriers service users (people with diabetes and those at risk of Type 2 diabetes) face when increasing their level of activity?
7. What do healthcare professionals perceive as the motivators for service users (people with diabetes and those at risk of Type 2 diabetes) to increase levels of physical activity?
8. What are the barriers preventing healthcare professionals from educating people about physical activity?
9. What tools and resources do healthcare professionals need in order to adequately support people to move more?
10. What are the most opportune points in patient pathway to discuss physical activity?
11. What can Diabetes UK do to help healthcare professionals in supporting service users to move more?

There will be a Final Learning Report on completion of all work to generate required insight. This will offer recommendations for future practice. To be completed by 03 September 2019. The following Literature Review is designed to analyse and synthesise current academic knowledge and understanding around diabetes and PA. This will assist with the planning of the next stage of the project.

Methodology

For this study, a narrative review was completed using a systematic approach. As the literature to be analysed is qualitative in both nature and concepts, this report can be classed as a meta-synthesis. Below depicts which academic databases were used and with what search terms. The amount of search results and how many of those that were relevant are also shown:

Database	Search terms	Number of results (including duplications)	Number of studies included for synthesis
PubMed	diabetes physical activity barriers, diabetes barriers to physical activity, diabetes barriers to physical activity systematic review, diabetes physical activity barrier, diabetes exercise barriers, diabetes physical activity facilitator, diabetes physical activity facilitators, diabetes physical activity motivation, diabetes physical activity motivators, diabetes physical activity motivator, diabetic physical activity barriers	625	30
Diabetic Medicine (Diabetes UK)	diabetes physical activity barriers	245	4
Practical Diabetes	diabetes physical activity barriers	9	1
Cochrane Library	diabetes physical activity barriers, diabetes barriers physical, diabetes barriers, diabetes physical activity, diabetes exercise, diabetes sport, diabetic physical activity	147	0
ADA Diabetes Care	diabetes physical activity barriers, diabetes barriers exercise	277	0
Embase (journals)	diabetes physical activity barriers	627	0
NICE	diabetes physical activity barriers	79	0
PROSPERO	diabetes physical activity barriers	0	0

Public Health England (publications)	diabetes physical activity barriers, diabetes physical activity	0	0
NHS England (publications)	diabetes physical activity barriers	210	0
Open Science Framework	diabetes physical activity barriers, diabetes barriers, diabetes physical	0	0

Inclusion criteria

Inclusion and exclusion criteria for the selection of studies to be synthesised followed PRISMA principles (Stovold, Beecher, Foxlee & Noel-Storr, 2014). However, it would not be classed as a systematic review as no independent reviewers were used to score items or assess quality. Therefore, not meeting Cochrane’s principles (Stovold et al., 2014). The databases used were selected due to their reliability and for being considered as the leading, peer-reviewed ones.

For inclusion in the initial search, articles had to be full text, less than 10 years old, based on humans, available and in English. To then be included in this literature review, studies had to contain research specific to the barriers and motivators to PA for people with diabetes. PA, exercise and keeping fit were used synonymously but had to be explicitly referred to for inclusion. Therefore, research that focused on health interventions or behaviour change was only included if PA was separately analysed. This was similar for comorbidities in that diabetes had to be examined individually to be considered for inclusion. The rarer types of diabetes, such as gestational and neonatal, were excluded due to their low prevalence and the specialised focus required. Articles had to clearly mention the barriers and motivators to PA, and not just discuss exercise in general. Articles also had to be completed with definitive findings, any on-going studies were excluded.

The methods for inclusion consisted of examining the article title for relevance, then the abstract, and then the whole study. Every study that ‘passed’ all three steps was included in this literature review. There were 35 studies in total, which were put in to appropriate groups, as can be seen in the previous ‘*Contents*’ section.

Finally, as the literature reviewed was primarily based around the social sciences, the appropriate American Psychological Association (APA) writing and referencing style has been used.

People living with Type 1 diabetes

For people with Type 1 diabetes (T1D), the most highlighted barrier to PA was the fear of hypoglycaemia (low blood glucose levels). This is demonstrated by Brazeau, Lhoret, Strychlar & Mirescu (2008) who argue that this significant barrier extends to an individual's limited knowledge about insulin pharmacokinetics and restricted comprehension of strategies to prevent hypoglycaemia. Therefore, they advocate that PA should include diabetes-specific actions to prevent hypoglycaemia. Informing and supporting people with T1D in hypoglycaemia management is a key approach to overcoming this barrier. The three other main barriers to PA that Brazeau et al. (2008) discovered were: work schedule; loss of control over diabetes; and low fitness level. Another interesting finding was that people who had greater perceived barriers to PA, had poorer blood glucose control (measured by HbA1c). This suggests that those who are able to manage barriers for PA are also the individuals with better diabetes self-management.

Lascar et al. (2014) found that limited knowledge about managing diabetes and its complications with PA acted as a considerable barrier to PA. Their qualitative research, using a good cross-section of English patients, contends that education about the effects of exercise on diabetes control is paramount for conquering this barrier. They concluded that this education is preferable on a one-to-one rather than group basis. Their principal conclusion was that people with T1D have many of the same barriers, motivators and facilitators towards PA as those with other chronic diseases and the general public. The barriers suggested were: time and work; access to facilities (cost and distance); embarrassment (body image and fear of failure); lack of motivation; and weather. The only barrier that would not be similar to that of the general public was the lack of knowledge on diabetes management during PA. The motivators for performing PA were health benefits, enjoyment, body image and social aspects. By comparison to education, it is worth noting that social interaction (group support) is preferred over one-to-one support. The facilitators highlighted were: better time management; support and encouragement; free or reduced admission to gyms/pools; and advice and information.

Support and encouragement was a key conclusion from Faulkner, Michaliszyn and Hepworth's (2010) research. Their study comprised of sedentary adolescents in USA undertaking a personalised exercise programme. A significant driver for performing PA was family support. However, parents of those with T1D had considerable anxieties about their children having hypoglycaemia during PA. Faulkner et al. (2010) state that families need to be educated in finding the balance between the risks of hypoglycaemia against the positives of PA for optimal diabetes control. In their research, the participants actually reported limited episodes of hypoglycaemia and indicated that no adverse experiences occurred. This simply means that the risks versus rewards of exercise should be taught to families, to help alleviate their concerns regarding the fear of hypoglycaemia. It was found that a community-based approach is beneficial and that perceptual factors such as how adolescents perceive

exercise and their health, did not correlate to barriers or benefits towards PA or exercise self-efficacy. Additionally, an unexpected finding was that those who were more physically active, initially reported more barriers to exercise. Although the statistical significance of this needs examining. Conversely, the Hvidoere Study Group on Childhood Diabetes (Aman et al., 2009) discovered that young people who had more positive views of their personal health were more physically active and vice versa.

Wilkie, Mitchell, Robertson & Kirk (2017) recently researched the motivations for PA in young people living with T1D. Their UK based study supported the evidence to show that a prime motivator of PA is the active involvement and support of family and friends. Having active friends was the main social factor that made PA enjoyable. In turn, enjoyment was found to be the overwhelming motivator. Family support also contributed to improving glycaemic control and increasing self-efficacy. Motivating elements of family involvement consisted of enhanced enjoyment, competition and valued family time. However, parents' understanding of the health benefits of regular PA was limited, as was their knowledge on PA recommendations and structured exercise and activities.

Thus, there is a suggestion to include families in education regarding PA and T1D. This education will assist in managing blood glucose levels during PA, which will lead to an increase in participation. Subsequently, self-efficacy will improve, which will help sustain behaviour change. For behaviour change, goal-based strategies were recommended over competition-based ones. Similarly, interventions that were individualised and community-based, resulted in greater increases in PA.

This study proposed that young people with T1D, and their parents, both value professional input and regard healthcare professionals (HCPs) as role models and a reliable source of PA information. Conversely, HCPs did not perceive themselves to be influential and felt insufficiently trained to give advice on PA, so focused on other attributes of diabetes management. This study found that for exercise there was often too much carbohydrate consumption or over-forceful insulin reductions. This was to avoid hypoglycaemia but in turn led to periods of hyperglycaemia. Consequently, Wilkie et al. (2017) suggest that diabetes clinics would benefit from having specialist PA advisors to educate children and families in managing their diabetes during PA. A final barrier to PA that Wilkie et al. (2017) discovered was bad weather. Equally, good weather was provided as a motivator. For this reason, advice given should be appropriate for the season, such as indoor alternatives. An example being active computer games or exercise DVDs.

Finally, a UK study by Kennedy, Narendran, Andrews, Daley & Greenfield (2018) investigated attitudes and barriers to PA in adults with a recent diagnosis of T1D. They sustain that their research participants had a decrease in PA levels around the time of diagnosis. Most of the barriers they uncovered were similar to those identified in healthy people, which came under the overall themes of:

- Time, work and environment
- Internal, social and personal
- Psychological
- Medical – this theme was specific to people living with T1D.

The main identified barrier to people living with T1D is the fear of hypoglycaemia, with some HCPs advising that these people with T1D not exercise. People with T1D identified low confidence in managing diabetes with exercise as a barrier to PA. They desired consistent advice from HCPs, patient education and support for PA from diabetes teams. However, this combination of support often does not happen for many people with T1D. For those that did report robust support, PA was taking place. Kennedy et al. (2018) were unsure if this was the reason for these people exercising or simply because they were active they obtained the information they required. HCPs should promote PA from diagnosis, and in a more positive manner. This is because it was indicated that unless it was initiated by the patient, knowledge and support from HCPs was not forthcoming. Patient resources regarding blood glucose management and PA are rare, with only one study participant claiming to have received any written information. This is a shame considering the majority of participants expressed a desire for this type of information.

Summary – People living with Type 1 diabetes

- The biggest barrier preventing people with T1D from becoming more physically active is the fear of hypoglycaemia. Equally, this is the principal anxiety that parents have for their children being physically active.
- Good blood glucose management often leads to the ability to better cope with other long-term conditions. As well, it reduces other barriers to doing PA.
- Education for people with T1D (and their families) around exercise and diabetes management is needed. This includes the health benefits of PA and hypoglycaemic management. This education improves self-efficacy, which will help sustain behaviour change. This is most effectively delivered on a one-to-one basis rather than in a group environment.
- Programmes should be individualised and goal-based strategies for increasing PA are more beneficial than competition-based ones.
- Support, encouragement and active involvement from HCPs and family are a major factor in increasing PA.
- People with T1D and their families trust and enact the advice of HCPs. They also look to them as role models.
- People with T1D and their families often lack information around PA and diabetes (management) from HCPs. They are not given consistent advice or support regarding PA. This is because HCPs do not feel adequately trained in PA. Specialist PA advisors in diabetes clinics have been recommended as a result.

There are many barriers, motivators and facilitators for people with T1D that are similar to those with other long-term conditions, as well as the general public. These consist of:

- Barriers: work schedule and time; access to facilities (cost and distance); low fitness level; embarrassment (body image and fear of failure); lack of motivation; bad weather; psychological.
- Motivators: enjoyment, especially with active friends and family; health benefits; body image; social aspects/interaction.
- Facilitators: support and encouragement; advice and information; better time management; free/reduced admission to gyms and pools.

People living with and at risk of Type 2 Diabetes

There have been a variety of barriers and motivators suggested by researchers towards PA and those living with and at risk of Type 2 diabetes (T2D). Due to their similarity, these two groups will often have similar barriers leading to problematic distinctions between the two. Biddle et al. (2017) conducted a 12-month trial investigating how to reduce sedentary time in UK adults at risk of T2D. First, they found that their participants were not surprised when they received a letter from their GP telling them that they were at risk of T2D. Due to family history or their weight, most were aware of their risk of T2D. Secondly, they discovered that walking was the main strategy adopted by adults at risk of T2D for moving more and reducing their sedentary time. The other popular PA strategy was more structured exercise, such as swimming or going to a gym. Finally, it was found that the three barriers to standing up (sitting down less) were:

- Participants' work context
- Feelings of tiredness
- Inappropriateness of standing in some contexts.

Work context and inappropriateness of standing was often due to social constraints. Many had desk jobs and claimed standing would decrease productivity. There were also concerns over the embarrassment of standing/moving around. Feelings of tiredness were most commonly cited at the end of the day. Therefore, early to late evening may be less well suited to standing and other PA strategies.

A number of studies outside of the UK have investigated the motivators and barriers to PA. Advika, Idiculla & Kumari (2017) summarised that the motivators were:

- Family support
- Emphasis by nurses
- Patient's knowledge. This knowledge consisted of awareness of complications and perceived benefits. The key benefits being reduction in blood sugar, reduction in weight and feel good factor.

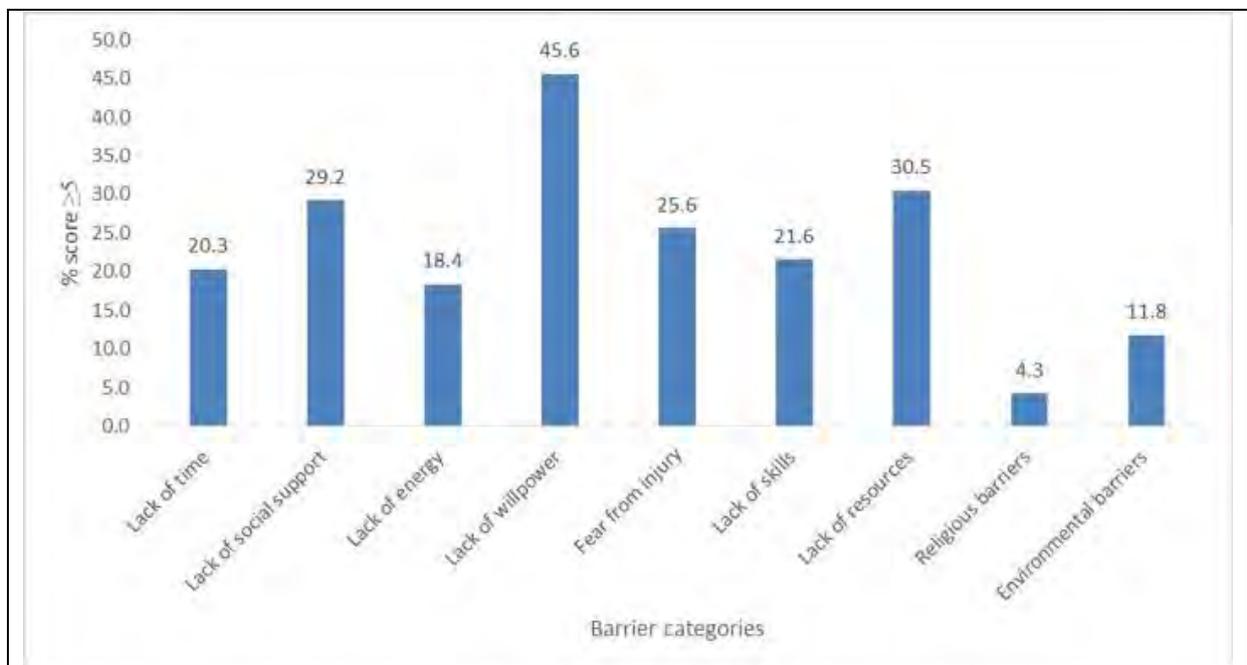
The main barriers found were:

- Lack of time
- Obligation to others
- Inadequate emphasis by physicians
- Physical restriction
- Knowledge. This comprised of the inability to link exercise with blood sugar control and a lack of perception of obesity as a health issue
- External barriers. The major ones being social issues and a lack of infrastructure.

Their work in India concluded that HCPs require appropriate training to identify each patient's PA habits at a personal level. This can be achieved using standard PA and diabetes guidelines.

Similar barriers and motivators were noted in France by Duclos et al. (2015), who extend this by highlighting the differences between active and inactive people with T2D. This was achieved by having physicians recruit both groups of people. They concluded that the primary difference in motivations between the groups came from their HCP. This is because of the active part that HCPs can have in prescribing and monitoring PA. As well, advice to patients needs to be tailored to meet individual needs. Unfortunately, the HCPs claimed that they do not have enough time in daily practice to spend on PA, although they were convinced of the importance of it.

Similarly, Alghafri et al. (2017) used a chart to indicate their findings on barriers to PA in Oman. This can be seen in Figure 2:



Percentage of reported high barrier scores

Figure 2 (Alghafri et al., 2017)

This shows that the three main barriers to PA were:

- Lack of willpower
- Lack of resources
- Lack of social support (especially in females).

Though religious barriers were investigated, religion was not found to be a significant barrier to PA.

Social support, especially in females, was found to be a key enabler to PA in a US study by Miller & Marolen (2012). They researched African American women with T2D. They found that this (social) support comes from a plethora of sources, such as HCPs and family members. This support comprises of many components, for example, task assistance, advice giving and listening. The other two barriers indicated were competing priorities and lack of motivation; mainly due to low levels of readiness.

Motivational interviewing was suggested as helping to improve this, as motivation is needed before competing priorities can be addressed. Motivation is a complex notion however. Participants in their study expressed a desire to be more physically active, but also lacked motivation for PA. Additionally, Miller & Marolen (2012) conclude that women with T2D knew the importance of PA but were struggling with how to be physically active. Group-and/or peer-based PA interventions were considered to work best due to the high altruistic intentions of this group.

Social support from family was found to be a significant motivator for PA for both men and women with T2D, according to Tulloch et al. (2013). Their Canadian research asserts that the other leading facilitators are: fitness improvements; the use of a personal trainer; future health benefits; and a sense of well-being. The major barriers highlighted were work commitments, poor weather, and illness or injury. Some other key points worth noting were that resistance exercise was better than that of aerobic-only exercise at increasing a sense of well-being, enjoyment, perceived fitness improvements and PA adherence. Also, study participants who remained more active reported more facilitators. This means that ideally, exercise professionals would have an understanding of both behaviour change and PA. Finally, Tulloch et al. (2013) indicate that two behaviour-change theories related to their research:

- Social Cognitive Theory
- Self-Determination Theory.

The perspective of Self-Determination Theory is highlighted by Lidegaard, Schwennesen, Willaing & Faerch (2016), who argue that intrinsic motivation is central to long-term PA adherence. Intrinsic motivation mainly consists of feelings of excitement, personal accomplishment and enjoyment. Another key motivator for PA uncovered was people with T2D being part of a social community and the feeling of commitment to others (social interaction). Their research states that team sports are best for motivating older men with T2D and that support from family and spouses was not a necessity. This is because people preferred to be involved in a network with peers who experienced similar exercise limitations and physical conditions. Centre-based (out of home) PA was found to have better retention rates than home-based PA. Also, specific goal-setting and using self-tracking devices are both useful strategies to assist with increasing levels of PA. The major barriers detailed by Lidegaard et al. (2016) can be summarised as:

- Lack of professional guidance
- Lack of accessibility

- Limited awareness of where or how to exercise
- Practical barriers and the local environment. For example, reduced mobility, weak physical condition and poor access to facilities all limit PA.

The physical environment is particularly important to those that are obese as these people need to feel safe, accepted and encouraged to engage in PA. An interesting outcome however, was that the fear of hypoglycaemia was not an important barrier to PA. This is the opposite for people with T1D. Finally, rather than just supporting people, encouraging self-management was more beneficial at increasing PA levels. This can be achieved by including activities in social networks and in local communities. The researchers do contend though, that there is large variation and numerous factors in barriers and motivations to PA, even in an otherwise homogeneous group.

This is reinforced by Sebire et al. (2018) who extend this notion by examining the different types of motivation needed for PA and behaviour change with people newly diagnosed with T2D in England. Applying Self-Determination Theory, they found that there are often competing motivations both between and within individuals. These motivations consist of non-regulation, external, introjected, identified, integrated and intrinsic. Relevant to this project, the principal observations are that motivation following diagnosis is complex and often low in self-determination. Also, HCPs should consider the quality of their patients' motivation and not just the quantity, to achieve patient empowerment.

If people with T2D are aided to internalise their motivation, the more resilient to barriers they will be (e.g., identify a personal benefit). This will make behaviour change more sustainable. Irrespective of their prevailing motivation, participants expressed a need for structure in their care, mainly through expert guidance provision and support. Hence, there is a desire for HCPs to understand the different types of motivation, with a suggestion of concepts from Social-Determination Theory being integrated in to medical training.

Different motivations will become more prevalent at different stages of a PA programme. Van Dyck et al. (2011) in their year-long study, found the following themes as most important at the differing stages:

- Initial mediators: Positive social norms and modelling from family
- Short-term: Being able to cope with relapse
- Intermediate-term: Self-efficacy towards overcoming specific PA barriers
- Longer-term: Social support.

Another study that focused on a PA programme for people with T2D, this time over 18 months, was undertaken by Casey, De Civita & Dasgupta (2011). They observed that the most significant factor for undertaking PA, both during and following their programme was motivation. People with T2D were often motivated by the encouragement, motivation and accountability of programme staff. Other motivators consisted of using a 'buddy system' and having the confidence in being able to

change (self-efficacy). However, a better transition was needed to post-programme realities of reduced support and supervision. The optimal programme was suggested as being closer geographically to participants and have greater scheduling flexibility.

The other key barriers to PA that they found were:

- Having co-morbidities
- Time constraints
- Poor weather
- Absence of support/supervision.

A final detail worth noting is that walking was the most popular and frequent form of PA post-programme. Although it was suggested that even participants in a walking programme need ongoing support.

Veldwijk et al. (2013) add that low level out-of-pocket cost is the main driver for people aged 35-65 in deciding on whether to participate in a PA programme or not. This is followed by the preference for individual consultation and a need for a high level of anticipated outcomes (regarding weight loss). Therefore, programmes should be as cheap as possible, communicate expected outcomes, and have an individualised structure.

Alternative research in to exercise adherence and T2D management was undertaken by Beverly & Wray (2010) who examined spousal support. They found that couples who had collective beliefs (of spousal support) were more likely to maintain a PA programme. Collective beliefs mainly consisted around the themes of 'collective support', 'collective motivation' and 'collective responsibility'. The study contends that HCPs should encourage positive spousal involvement as this creates a collective efficacy to adhere to PA. This leads to a shared confidence to perform exercise and achieve diabetes management goals. This is a major concept of Social Cognitive Theory that a person's desire and capability to execute PA will increase if they observe their spouse actively participating in their diabetes management. For example, encouraging exercise and sharing the responsibility to exercise (e.g., playing a paired sport like tennis).

PA is an aid to blood glucose self-management for people with T2D, according to Avery et al. (2015). They conducted a systematic review of 27 behavioural interventions associated with PA and changes in HbA1c. This totalled 1,975 people living with T2D aged 35-75. They concluded that there are four leading principles to increase PA and in turn, improve diabetes management. These are:

- Prompt focus on past success – identify successful behaviour change from the individual's past
- Barrier identification/problem-solving – identifying barriers to PA for the individual and strategies to overcome them
- Use of follow-up prompts – reminder postcards or motivational telephone calls

- Provide information on where and when to perform the behaviour - give explicit information on locations, times and opportunities available locally for changing PA behaviour.

It was suggested that HCPs could optimise their consultations by utilising these behaviour change techniques.

Technology

A final consideration presented by Avery et al. (2015) was the use of pedometers. In general, they increased PA as they assisted with self-monitoring of behaviour. However, for older adults (aged over 60 years) it was found that pedometers do not yield effective behaviour change. Specific groups may therefore need further support in using them as an effective self-monitoring tool.

Dasgupta et al. (2014) similarly found that pedometers are useful for motivating those with T2D to perform PA. Furthermore, they enhance awareness of current PA levels and participants in their study expressed a desire for greater levels of tracking and monitoring. This self-monitoring is most effective when individualised, and when used with personalised goal-setting and accountability. Additionally, regarding technology, the Internet was highlighted as being a great aid. For example, online progress charts and chat forums; which also provide social support. The use of pedometers acting as a motivator for people with T2D undertaking exercise is supported by Hu et al. (2015). They assert that pedometers are a cost-effective and user-friendly technique for: measuring PA; indicating progress; monitoring activity; and for the promotion of self-management.

Finally, in relation to technology and PA for people with T2D, Connelly, Kirk, Masthoff & MacRury (2013) completed a systematic literature search around this. They summarise that technology is effective in increasing PA but it needs to be complemented with other components. These include coaching, logbooks and reinforcement (e.g., emails and telephone calls). Peer-to-peer support was encouraged but a personal coach seemed to be more effective. Web-based PA programmes were most successful when they were personalised through feedback or tailored information. However, it is worth noting that this review was completed in 2013 and technology has advanced rapidly since then.

Black, Asian and Minority Ethnic populations

Patel et al. (2016) conducted a comprehensive narrative review exploring the barriers and facilitators of minority ethnic populations with or at risk of T2D engaging in PA. The majority of the identified studies consisted of South Asian populations due to a limited availability of research on other Black, Asian and Minority Ethnic (BAME) populations. The review found that ethnic minority groups tended to do less PA than their Caucasian counterparts. They had less understanding of the actual levels of PA needed to gain health benefits. Most of the BAME participants knew that they were at increased risk of developing T2D but this risk was mainly attributed to perceived external events. For example, stress, genetics and fatalistic beliefs, rather than obesity or lifestyle behaviours. Many Indian South Asians were sceptical about the role of obesity, naming 'karma' or destiny as greater influences towards increased risk. It concluded that BAME groups are not a homogeneous population, with diverse and contrasting findings from the review studies. There are widely differing characteristics between ethnic groups, such as religion, language and heritage. These need to be considered contextually, along with cultural barriers when discussing PA.

Overall, the most prominent barriers to PA were:

- Community and family pressures to conform to social norms
- Prioritising work over PA to provide for the family
- Fear of racial abuse or harassment when exercising
- For women - expectations to stay in the home, fear for personal safety, lack of same gender values and concerns around the acceptability of wearing 'western' exercise clothing.

The key facilitators to PA included:

- A diagnosis of T2D
- Desire to be healthy
- Concern that weight gain might impact on family/carer responsibilities
- PA classes held in 'safe' environments (e.g., places of worship).

In their recent research of people with T2D in Sri Lanka, Medagama & Galgomuwa (2018a, 2018b) found that females were more inactive than males but that both genders knew of the health benefits of PA. However, many were unsure of what could be classed as PA. For example, walking was sometimes described as not being PA. Their studies assert that they are in alignment with previously reported research conducted with Asian ethnic minorities living in the UK. They summarise that the main barriers to PA are:

- Health-related issues, such as breathing problems when exercising
- Time and lifestyle management (e.g., prioritising household activities)

- Environmental, social and cultural conditions – primarily embarrassment in public areas, non-acceptance by others of exercising at home and not having suitable facilities.

The key facilitators suggested were:

- Having dedicated PA areas
- Support of family
- Availability of equipment
- Privacy whilst exercising and getting changed.

Summary – People living with and at risk of Type 2 diabetes

- People with and at risk of T2D often **know** the importance of PA and its health benefits, although some of the BAME population may need more education on this. The biggest barriers were **how** to be physically active (e.g., lack of professional guidance) and **when/where** to exercise (e.g., poor access to facilities).
- People with and at risk of T2D are more likely to be physically active if HCPs prescribe and monitor PA. HCPs in general, know of the importance of PA and its health benefits for those with and at risk of T2D. However, HCPs require appropriate training to identify each patient's PA habits at a personal level and tailor PA to meet individual needs. HCPs report that they do not have enough time in their daily practice to discuss PA. Therefore, PA and diabetes guidelines for HCPs are needed.
- Motivational interviewing by exercise professionals and HCPs would be advantageous as motivation is key to increasing an individual's PA level. Although there are different and complex types of motivation, with intrinsic motivation being the most prominent for PA adherence. Improving a person's self-efficacy will improve their motivation. Counselling skills and behaviour change knowledge would also be beneficial. This is underpinned by the theoretical concepts of Social Cognitive Theory and Self-Determination Theory.
- A key barrier to PA is lack of social support, especially in females. There is a desire for a social community and social interaction. Team sports appear to be best at motivating older men and universally, group- and peer-based PA programmes are most effective. As are centre-based programmes rather than home-based programmes.
- Pedometers were found to be a useful motivation tool, but less so for older people who may require additional support when using them.
- Walking was the most popular form of PA.
- Major barriers to PA were: illness/injury (including reduced mobility); weak physical condition and having comorbidities; and poor weather.
- A key enabler to PA, especially for BAME populations (females in particular), is having 'safe' environments to exercise in.
- Fear of hypoglycaemia was not a significant barrier to PA for people with T2D.

People affected by diabetes (Type 1, Type 2 and those at risk)

Four studies were identified in the review that looked at all groups of people affected by diabetes (namely T1D, T2D and those at risk). Huebschmann et al. (2011) suggest that fear of injury is a principal barrier to PA for those with diabetes. This barrier increased with age and body mass index (BMI). Therefore, HCPs should ask these groups of people if they have a fear of injury so that they can suggest safe ways to exercise.

Crews, Schneider, Yalla, Reeves & Vileikyte (2016) found that the risk of diabetic foot ulcers were a substantial barrier to PA. This also caused a variety of psychological challenges, mainly depression. Nevertheless, they contend that PA can still be done if careful considerations are made. This includes: offloading (redistributing weight); wearing appropriate sized shoes with customised insoles; daily home monitoring of foot temperature; and avoidance of unsupervised activities that challenge balance. For overcoming psychological barriers, the key facilitators given were increasing self-efficacy and improving social support.

This is supported by Ingram, Ruis, Mayorga & Rosales (2009) who found that self-efficacy and social support were the fundamental aspects needed for PA programmes to be effective and adhered to. These two aspects together help form collective efficacy; the belief that PA groups, through collective effort, can improve their lives. Therefore, PA interventions should use a group approach designed to grow self-efficacy and mutual social support.

Finally, Faulkner, Michaliszyn, Hepworth & Wheeler (2014) observed that pedometers are a useful tool for increasing PA levels in adolescents. They suggest that exercise adherence would be most effective if it can take place in settings in which the adolescents reside and fits in with their personal preferences. Additionally, PA should be promoted in a realistic manner. A proposal given was to break up the recommended 60 minutes of daily aerobic activity in to shorter bouts of 10, 20, or 30 minutes. This chunking makes it easier to overcome barriers and makes PA more achievable.

Healthcare professionals

General Practitioners (GPs) are the primary source of information concerning healthy lifestyle decisions for people with diabetes, according to Lannhers et al. (2015). They maintain that the advocacy of PA is more convincing coming from a HCP who is physically active. Furthermore, the less barriers that GPs have to exercise themselves and to promoting PA, the more likely their patients are to be physically active. It was found that patients with a male GP were less active. An explanation of this could be that generally male GPs are less empathic and spend less time on patient education than female GPs. Lanhers et al. (2015) conclude that GPs need to be better informed about the effects of PA, their patients' barriers and their own barriers. Again, it was advised that HCPs would benefit from having a network of specialist professionals in PA for patients with diabetes.

This is reinforced by Duclos, Coudeyre & Ouchchane (2011) who argue that:

Endorsement of physical activity is more credible coming from a professional who practices physical activity. GPs should practice physical activity themselves, not only for their own benefit, but also as a stimulus for their patients. If this proves to be an effective strategy, identifying and working on GPs' barriers but also promoting physical activity in GPs may improve the uptake of physical activity in Type 2 diabetes patients. (Duclos et al., 2011, p.122).

The barriers for HCPs was examined by Quirk, Blake, Dee & Glazebrook (2015) who investigated HCP perceptions of PA children living with T1D in the UK. They discovered that HCPs knew they had a role in promoting and managing PA, but often lacked confidence in their PA knowledge due to inadequate training. Other barriers consisted of: time constraints; lack of standard protocols; lack of financial incentive; their own interests and health behaviours; and difficulty converting PA advice in to an easy to understand format. HCPs also stated that those children who were most in need of PA, were the ones that were also most difficult to engage in conversation around PA.

Often, HCPs perceived parental support as having a significant impact on children's PA participation, in particular parents' emotional and logistical support. A primary reason being the responsibility that parents often have for the day-to-day management of blood glucose control, leads to a unique influence on their child's exercise behaviours. Parents can also be a main source of social support, along with the children's friends, especially their active friends (peer support). Moreover, HCPs noted that children's enjoyment of PA correlated to their history of participation and accomplishment in PA. This led Quirk et al. (2015) to suggest that children might be intrinsically motivated to perform PA and that self-efficacy could be a key trait driving children's motivation. Finally, HCPs perceived schools as having a key part to play in promoting PA. They claimed that it was the role of the diabetes team to ensure appropriate safety precautions and training are in schools to facilitate PA for children living with T1D. However, they recognised that teachers would have limited knowledge and confidence regarding PA and diabetes, so training here may be beneficial.

Similarly, nurses who were responsible for discussing lifestyle adaptations with their diabetes patients stated that PA change was difficult and often not required. This was a finding by Matthews, Jones, Thomas, van den Berg & Foster (2017) who investigated exercise promotion by HCPs to people with T2D in England over the age of 50. They argue that the nurses' attitudes and behaviours around PA fall in to four themes of relevance (Health Belief Model): threat, benefit, barriers and self-efficacy. This asserts that a nurse's belief that patients cannot change their PA behaviour results in PA being highlighted negatively or possibly not at all. Matthews et al. (2017) extend this by using a Theory of Planned Behaviour to illustrate how cultural norms influence nursing practice around PA. This indicates that there are three classifications of belief: behavioural, normative and control. These guide the nurses' intentions to act, which leads to the actual desired behaviour. Matthews et al. (2017) summarise that it is possible to provide professional education to HCPs concerning the promotion of PA that is so well respected that it is adopted by the HCP community. This education/training needs to have robust partnerships and processes. Additionally, a systematic and more coordinated approach is required that puts patients at the centre and provides on-going support.

However, there is a deficiency in evidence-based training programmes, according to Balducci et al. (2015) that equip HCPs with the knowledge, skills and confidence to assist adults with T2D to become more active. There is a lack of knowledge around diabetes on the part of exercise trainers and also a lack of dedicated facilities. Finally, Balducci et al. (2015) found that counselling interventions dedicated solely on PA were much more effective in promoting PA than those focused on addressing multiple lifestyle behaviours.

Similar findings were highlighted in research by Peel, Douglas, Parry & Lawton (2010) who analysed people with T2D in Scotland. The patients they studied claimed to have received non-specific and vague guidance about PA from HCPs. They also stated that there was a perceived absence of encouragement and interest from HCPs around PA. Discussion in general regarding PA was marginal. Regular undertaking of PA by the patients was found to be challenging to maintain and 'faddy' forms of PA were seen as being unsustainable. Walking was emphasised as being a popular form of PA. Peel et al. (2010) extended this by asserting that walking with a dog is an achievable and more importantly, a sustainable form of exercise for people with T2D. This is because it provides companionship and regular, routine activity. Therefore, a suggestion given by Peel et al. (2010) is for HCPs to ask patients about pet preferences and encourage dog walking or other similar interests that promote sustainable PA.

Summary - Healthcare professionals

- HCPs are the primary source of information concerning healthy lifestyle decisions for patients with diabetes.
- HCPs knew they had a role in promoting and managing PA, but often lacked confidence in their PA knowledge and were inadequately trained in delivering such guidance. Other barriers consisted of: time constraints; lack of standard protocols; lack of financial incentive; their own interests and health behaviours; and difficulty converting PA advice in to an easy to understand format.
- Patients claimed that discussion with HCPs regarding PA was marginal. The guidance was also non-specific and vague. There was a perceived absence of encouragement and interest from HCPs around PA.
- It is possible to provide professional education to HCPs on how to promote PA in a well-respected way so that it is adopted by the HCP community.
- HCPs would also benefit from having a network of specialist professionals in PA for patients with diabetes.
- The advocacy of PA is more convincing coming from a HCP who is physically active. They would be more likely to understand patients' barriers and motivators to PA. Furthermore, the less barriers that GPs have to exercise themselves and to promoting PA, the more likely their patients are to be physically active. They can act as role models.
- HCP's attitudes around PA fall in to four themes of relevance: perceived threat, perceived benefit, perceived barriers and perceived self-efficacy.
- Cultural norms influence HCP practice around exercise promotion.
- HCPs perceived parental support as having a significant impact on children's PA participation, in particular parents' emotional and logistical support.
- HCPs perceived schools as having a key part to play in promoting PA.
- Counselling interventions dedicated solely on PA were much more effective in promoting PA than those focused on addressing multiple lifestyle behaviours.
- Walking was found to be a popular form of PA. Walking with a dog is an achievable and more significantly, sustainable form of exercise. Therefore, HCPs could ask patients about pet preferences and similar interests that promote sustainable PA.

Next Steps

To provide answers to the 11 research questions for this Sport England grant (outlined on Page 3), over the next phase of the project we will:

- Continue to investigate the general barriers and motivators to PA for people with T1D and those with and at risk of T2D.
- Look to gather insight on how barriers to PA might differ according to ethnicity, geographical spread (rural vs. urban) and disparities in affluence.
- Address what ‘fear’ of hypoglycaemia means for people living with T1D. The literature identified that fear of hypoglycaemia is the most significant barrier to PA for those with T1D. However, this has not been studied in depth. For example, it has been implied that fear is not necessarily dread or anxiety but actually a sense of frustration and futility. An instance being ‘what’s the point of exercising if sugar has to be consumed as a consequence’. Therefore, the concept of ‘fear’ needs investigating. Additionally, we will investigate what people with T1D know about hypoglycaemia management and the benefits of PA. This will help us to establish what information they need to best manage their diabetes management during exercise.
- Identify what (professional) guidance on PA is needed for all those living with or at risk of diabetes. We will ask whether people know where to exercise and if exercise is accessible.
- Research the barriers that HCPs have in promoting PA and what can be done to help HCPs overcome these barriers.

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Appendix 2

**A qualitative inquiry to explore physical activity among people
living with diabetes**

APPENDICES



May 2019

This research project was funded by Diabetes UK.

1 Appendix 1 Methods

1.1 Recruitment

The focus of this qualitative inquiry is type 1 diabetes and type 2 diabetes and not prediabetes or gestational diabetes mellitus. Participants were recruited on a voluntary basis using a convenience sampling technique. An advert for people living with diabetes was distributed by researchers primarily via Twitter and also via emails to the local Diabetes UK network. The advert for supporters and health professionals was distributed via existing contacts in the field and Twitter. The adverts were shared via Twitter and alongside the advert was a link to a short online survey where people could express their interest to take part.

1.2 Screening survey

People responding to the advert were directed to an online screening survey. The purpose of the screening survey was to enable the research team to select participants that represented a range of backgrounds and ethnicities and brought a range of experience (physical activity experience and/or professional experience) to the workshops. It was initially intended that all people living with diabetes would be screened to select those who self-identified as inactive, but instead a range of people with differing levels of physical activity experience were included in the workshops. Researchers set out to recruit up to 10 people living with type 1 diabetes, at least 10 people living with type 2 diabetes and up to 20 supporters/health professionals.

1.3 Workshops

Willing participants were sent the participant information sheet and asked to confirm their availability. Those willing, but not available were sent the same questions via email and asked to answer in as much detail as possible. Separate workshops were conducted with each priority group. Workshops consisting of focus group discussions underpinned by the collaborative nature of co-production were used to conduct this qualitative inquiry. The use of co-production tools such as brainstorming, prioritisation and “how might we” activities were used to encourage conversation and creative ideas. These techniques promoted a lively and dynamic conversation amongst workshop attendees.

1.3.1 Workshops for people living with diabetes

One workshop for people living with type 1 diabetes (n=9) and one workshop for people living with type 2 diabetes (n=6) were conducted. Workshops took the following format:

- Workshop for people living with diabetes

 1. Welcome and introduction
 2. Consent
 3. Introductions
 4. What physical activity means to me exercise
 5. Barriers to starting and maintaining an active lifestyle brainstorm
 6. Opportunities/things that help start and maintain an active lifestyle brainstorm
 7. Prioritisation
 8. "How might we..." support you?
 9. Opportune moments
 10. Final comments
 11. Thank you and close

Further details of what each section consisted of can be found in Figure 1. Workshops were conducted by three experienced researchers. They were recorded using digital voice recorders.

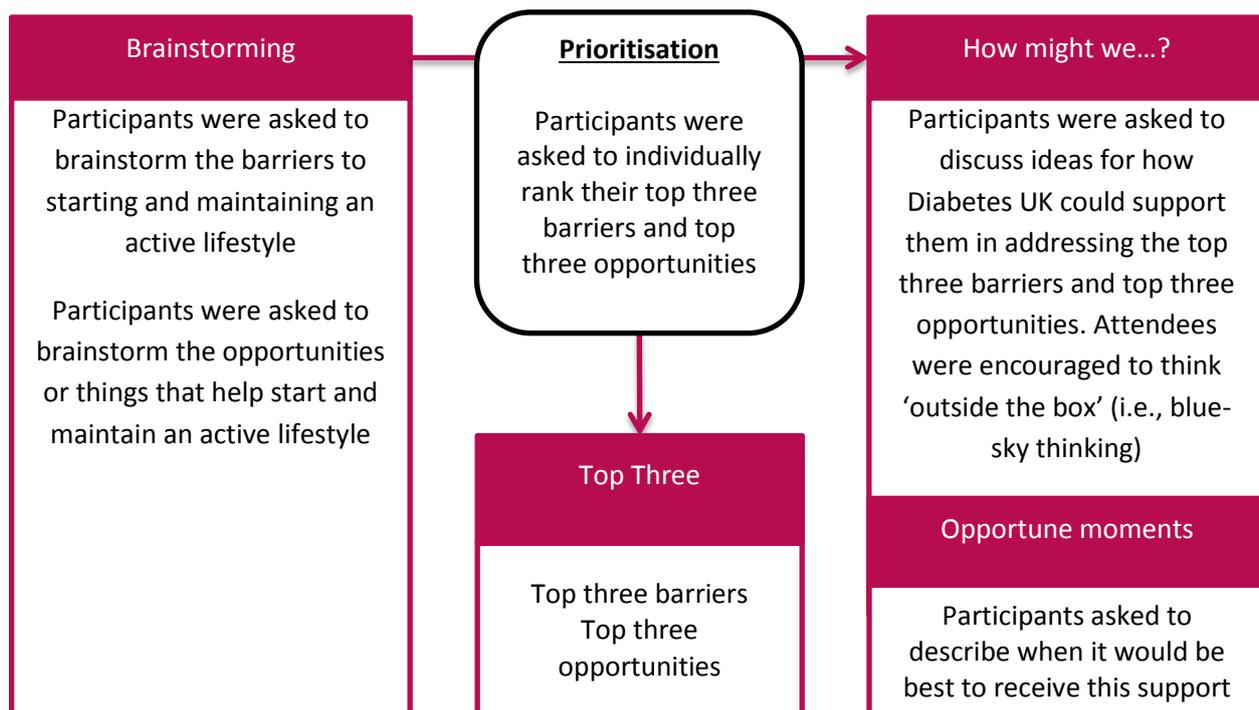


Figure 1 Format of the workshops

1.3.2 Workshops for people supporting those living with diabetes

Two workshops for supporters/healthcare professionals were conducted. One involved a group of local Diabetes Specialist Nurses (DSNs) and a dietitian (n=9) and the other involved a mixed group of supporters/healthcare professionals (n=4). Workshops followed the same format as those conducted with people living with diabetes, except there was an additional focus on the current resources available to help supporters/healthcare professionals promote and advise on physical activity. Further details of the workshop can be found in Figure 1. Workshops were conducted by two experienced researchers. They were recorded using digital voice recorders.

1.3.3 Additional data collection via email

During recruitment it became apparent that people were interested, but unable to attend the scheduled workshops. Those willing, but not available were sent the same questions via email and asked to answer in as much detail as possible (see Appendix 2 and 3 for questions).

1.4 Data analysis

Data analysis sought to break down the data collected across all workshops into smaller units and reorganise them into meaningful stories. It followed the strategy below:

Data analysis strategy

- **Familiarisation** – involved listening back through the audio recording and making notes
- **Transcription** (if possible) – the audio files were transcribed if time and sound quality permitted
- **Coding transcripts/audio files** – involved annotating the transcripts, highlighting topics of interest to the research question(s)
- **Thematic analysis** – involved merging similar codes into categories (e.g., barriers, opportunities) and then generating broader themes to represent the data
- **Researcher triangulation** – all researchers provided feedback on the interpretations, arriving at congruence
- **Use of quotes** – participants' quotes were used as exemplars of each theme, providing evidence for the interpretation

2 Appendix 2 Email questions

Email questions for people living with diabetes

- **Question 1: What comes to mind when you think about physical activity?** (this could be a type of activity, the way you feel about it, a person, thing or emotion)

[please write your answer here in as much detail as possible]

- **Question 2: PROBLEMS:** Using your own experience, please tell us about the problems you face when trying to start and maintain an active lifestyle.
 - Think about the problems you experience now and/or also those you've experienced in the past.
 - Think broadly about problems related to your condition and health, your background and previous experiences, your living situation, and the access you have to physical activities.
 - If you can't think of many, think about how other people living with your condition (type 1 or type 2 diabetes) might feel about physical activity and the barriers/problems they might face when trying to start and maintain an active lifestyle.

[please write your answer below in as much detail as possible]

Problem 1:

Problem 2:

Problem 3:

Continue as required

- **Question 3: OPPORTUNITIES:** Using your own experience, please tell us about the opportunities / things that help start and maintain an active lifestyle.
 - Think about the ways you (or other people living with diabetes) overcame the problems mentioned above.
 - What resources and tools help to overcome some of the problems?
 - If you can't think of many, think about what might help other people living with your condition (type 1 or type 2 diabetes) to start and maintain an active lifestyle.

[please write your answer below in as much detail as possible]

Opportunity 1:

Opportunity 2:

Opportunity 3:

Continue as required

• **Question 4: Prioritisation:**

- With the problems and opportunities you've stated above, please rank what you believe to be the 2 most important problems and 2 most important opportunities.

Most important problems about trying to maintain an active lifestyle	Most important opportunities that help to maintain an active lifestyle
1.	1.
2.	2.

• **Question 5: What can Diabetes UK do to help people living with diabetes to be more physically active?**

You might want to think about:

- When is the best time for this support to happen?
- Who is the best person / people to be involved?
- How can others support you to start and maintain an active lifestyle?
- You might want to think 'outside the box' - imagining a world where funding and possibilities were endless!!

[please write your answer here in as much detail as possible]

• **Question 6: Thinking about your diabetes journey - when would this support be most worthwhile?**

- When are the opportune moments to have meaningful discussions about physical activity?
- Who is the best person/people to have these discussions with?
- Think about : pre-diagnosis, diagnosis, immediately post-diagnosis, your regular clinic appointments, times you might see your GP or community nurses, etc.

[please write your answer here in as much detail as possible]

• **Question 7:** Do you have any further comments or questions for the researchers or Diabetes UK?

3 Appendix 3 Email questions

Email questions for supporters/healthcare professionals

- **Question 1: Current resources:** What information/support around physical activity do you currently use with people who have diabetes?
 - Please list the resources you use, providing as much detail as possible about that resource- next to each resource, please describe what you think about that resource.

Resource (e.g., training, information, leaflets, online resources, courses, conferences)	What do you think about this resource? (e.g. is it easily available, does it help your practice, is it easy to use, is it effective?)

(add more rows as required)

- **Question 2: PROBLEMS:** Please tell us about the problems you face when encouraging people living with diabetes to start and maintain an active lifestyle.
 - Think about the problems you experience now and/or also those you've experienced in the past.
 - Think broadly about problems related to the person you're working with, your background and training and availability of resources.
 - If you can't think of many, think about the problems other health professionals might face when working with people living with diabetes.

[please write your answer below in as much detail as possible]

Problem 1:

Problem 2:

Problem 3:

Continue as required

- **Question 3: OPPORTUNITIES:** Please tell us about the opportunities / things that help you when encouraging people with diabetes to start and maintain an active lifestyle.
 - Think about the ways you (or other health professionals) can overcome the problems mentioned above.
 - What resources and tools help to overcome some of the problems?

[please write your answer below in as much detail as possible]

Opportunity 1:

Opportunity 2:

Opportunity 3:

Continue as required

- **Question 4: Prioritisation:**

- With the problems and opportunities you've stated above, please rank what you believe to be the 2 most important problems and 2 most important opportunities.

Most important problems when trying to encourage active lifestyles among people living with diabetes	Most important opportunities that help to encourage active lifestyles among people living with diabetes
1.	1.
2.	2.

- **Question 5: What can Diabetes UK do to help people living with diabetes to be more physically active?**

You might want to think about:

- When is the best time for this support to happen?
- Who is the best person / people to be involved?
- What training / resources are needed?
- What social support can be used?
- You might want to think 'outside the box' - imagining a world where funding and possibilities were endless!!

[please write your answer here in as much detail as possible]

- **Question 6: Thinking about the diabetes journey - when would this support be most worthwhile?**

- When are the opportune moments to have meaningful discussions about physical activity?
- Who is the best person / people to have these discussions with?
- Think about: pre-diagnosis, diagnosis, immediately post-diagnosis, at regular clinic appointments, GP appointments, community services... etc

[please write your answer here in as much detail as possible]

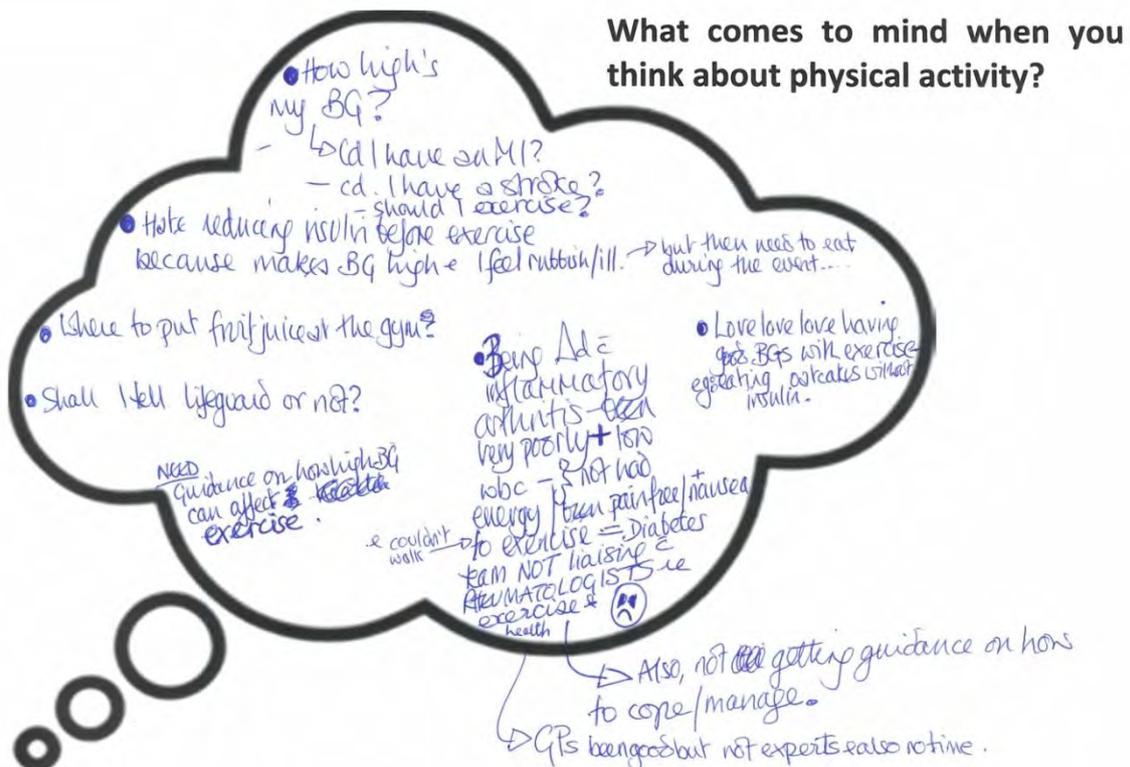
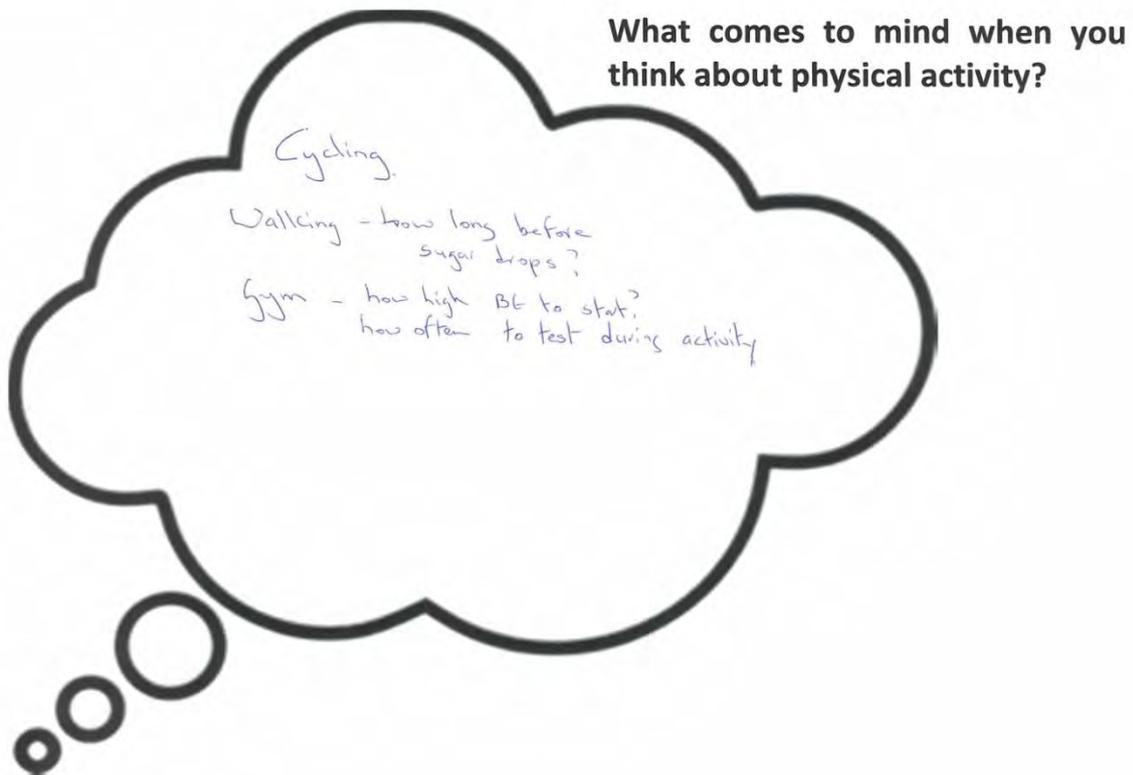
- **Question 7: Final thoughts**

- What can Diabetes UK do to help healthcare professionals or other supporters in supporting people with diabetes to start and maintain an active lifestyle?

[please write your answer here in as much detail as possible]

4 Appendix 4 Workshops

Thought bubble exercise to encourage workshop attendees to think about what physical activity means to them.



PROBLEMS

Hypo (constant threat) → having sugar on hand (Jelly babies etc)
Frustration of hypo eating more → cycle ~~of exercise~~ exercise feels like time waste.
Hypo → 'mad munchies' → cause ↑ in eating
planning (amount of)

Short term v long term exercise → how do you sustain?

Solo exercise - shy away from club → feeling embarrassed

Exercise adjustment 'social embarrassment'
perhaps others need to change their views (non-diabetics / judgemental)
avoid group base due to having to eat or checking blood sugar → feeling of letting team down

Mixed view on diabetes specific groups

Diabetes encompass both type I + II → negative connotations associated.

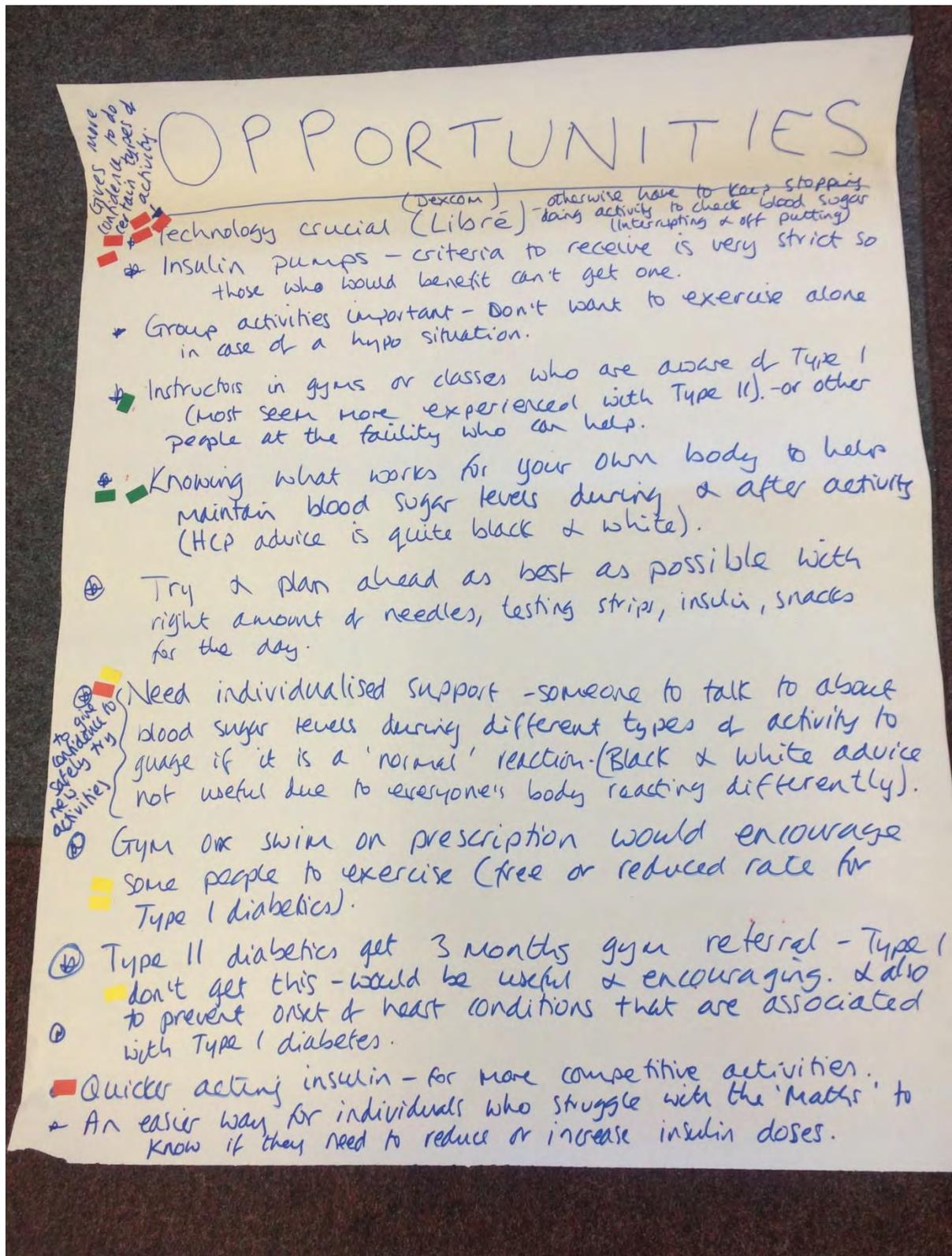
needs a focus (mainstream) → e.g. cycle /

Unplanned activity e.g. supermarket / DIY
'things that you wouldn't think are activity':
Worst hypos → underestimation / moving house.

Benefit of exercise can be outweighed by medication
Swimming is very difficult, don't know when you are getting hot.

Hypo symptom + exercise symptoms are very similar
hard to distinguish.

List of problems and prioritisation stickers to indicate the most important (red), second most important (yellow) and third most important (green) - taken from type 1 diabetes workshop



List of opportunities and prioritisation stickers to indicate the most important (red), second most important (yellow) and third most important (green) - taken from type 1 diabetes workshop

Training 'Ring fenced' Health Professionals

on Promoting PA.

- ↑ Confidence advising
- ↑ Knowledge
- Course
- Watching effective health professionals (hard on experience)
- Undergrad level - medical curriculum
- Professional level
 - CPD
 - Regular courses

Open University - BBC

YouTube

Google searches
Facebook
TV

Netflix

"BLUE SKY THINKING"
What can Diabetes UK do to help people to be more physically active?

- Check evidence base
- Visuals - Environment
- Case Studies eg Nature / Green
- Chartered Society of Physio

Realistic LTH

Policy link with environment

Communication

- Verbal
- Written
- Internet
- BME populations
- Close links with GPs

Resources - specific

Timing irrelevant "Journey"

Schools

Advice on active travel

Cultural shift

Patent understanding of basic science of exercise + blood sugar (eg Spongy Analogy)

Depends on readiness.

Specialist Services

- Coordinator role (funded)
- Prevention - Community
- Health Care Professionals (people facing)
- Free local exercise eg Park Run
- Health Ambassador Role
- Women only / Random

"How might we...?" exercise to explore recommendations for what Diabetes UK could do (taken from workshop with supporters/healthcare professionals)

How Might We... -

TIME: Develop a policy or workplace type intervention for Type II diabetes ^{-tailored}

- Put in less stressful situations.
- Employers to encourage Type II to put time aside at work to manage health. (Manager to acknowledge / account for Type II's not feeling stressed or pressure at work).

MOTIVATION: Develop a programme or a challenge to follow with regular check ins and progressive / different challenges.

- Something with structure - like Slimming World but more private so not in a group being weighed. Possibly with DSNs.
- Diabetes advisors / qualified gym instructors / has to be right type of person.
- Train GPs in nutrition for diabetes & activity.
- Specific support (intervention involving diet and activity together. (tailored).
- Outdoor gym type machines in / near workplace.
- Workplace walking groups.
- Specific Diabetes UK app to track / monitor activity.
 - Daily targets
 - Linking up to others / ~~peer~~ peer support for inspiration.
 - Could be linked to diabetes trainer support or DSN Support.
 - Diet info / logging & tracking.

easier to keep to a diet when keeping up with regular activity.

FATIGUE: simple exercises to do not to bring on or exacerbate fatigue

- what intensity to exercise at.
- what mode is appropriate

LOW MOOD:

- Being able to acknowledge low mood or talk about it.
- More frequent community champion meetings
- set-up activities for Type II's or other groups.
- Change 'stigma' of 'support' groups - rhetoric of how groups are promoted is important for engagement. - Not victims.
- Get more knowledge, use own knowledge to help others.

"How might we...?" exercise to explore recommendations for what Diabetes UK could do to address the main priorities (taken from type 2 diabetes workshop)

**A qualitative inquiry to explore physical activity among people
living with diabetes**



May 2019

This research project was funded by Diabetes UK.

Lay Summary

This project aimed to explore the barriers, drivers, support and opportunities to being physically active among people living with diabetes. To do this, workshops were conducted with people living with diabetes (type 1 and type 2 diabetes) and supporters/professionals who have a specialist interest in diabetes. A total of 15 people living with type 1 diabetes, 16 people living with type 2 diabetes and 16 supporters/professionals were involved.

In this report, findings are presented as i) barriers to starting and maintaining an active lifestyle among people living with diabetes, ii) opportunities that help people living with diabetes to start and maintain an active lifestyle, iii) prioritisation of barriers and opportunities, iv) recommendations and, v) opportune moments for support. These findings are presented from three perspectives; people living with type 1 diabetes, people living with type 2 diabetes and supporters/professionals. The infographic on the following page presents an overview of the barriers, opportunities, recommendations and the suggested priorities for Diabetes UK offered by the research team.

The findings from this qualitative inquiry serve to support and strengthen the existing evidence base demonstrating the barriers and facilitators to physical activity among people living with diabetes. Resource should now be focussed on responding to the needs of people living with diabetes and supporters/healthcare professionals. Perhaps it is time for a new approach and we have made some suggestions, including; training healthcare professionals, implementing a new physical activity specialist role in the diabetes team, training gym/fitness instructors, improving the profile of existing resources and building upon community assets. Overall the findings imply the potential value of taking an asset-based, solution focused, value driven approach to supporting physical activity among people living with diabetes.

Keeping active with diabetes

TYPE 1 DIABETES

Barriers

- The 'constant threat of hypos'
- Lack of awareness among others
- Physical activity advice lacking in current clinical care
- Other barriers like pain, injury, cost, access and time

Opportunities

PUMP GOALS
ROLEMODEL
FREEACTIVITY
ENCOURAGEMENT
FREESTYLELIBRE
MENTALSTRENGTH
HYPOAWARENESS
ACTIVETRAVEL
TECHNOLOGY CGM
EDUCATION
ROUTINE
DAFNE

Recommendations

- Intensive, individually tailored period of support
- Specialist training for gym/fitness instructors
- Discounted gym memberships and entry fees

TYPE 2 DIABETES

Barriers

- Time pressures and other commitments
- Lack of motivation
- Low mood, fatigue and negative feelings
- Limited physical activity support from the healthcare team
- Other barriers like cost, access and language

Opportunities

GOALS
DESMOND
PARKRUN
COUCHTOSK
HOME-BASED
ENCOURAGEMENT
MOVEMENTBREAKS
INSPIRATIONDIET
ENDORPHINS
PEDOMETER
INTERNET
COMPANY
FITBIT

Recommendations

- Workplace initiatives to promote physical activity
- Increased availability and accessibility of local activities and services
- Individually tailored physical activity programme / App

SUPPORTERS / HEALTH PROFESSIONALS

Barriers

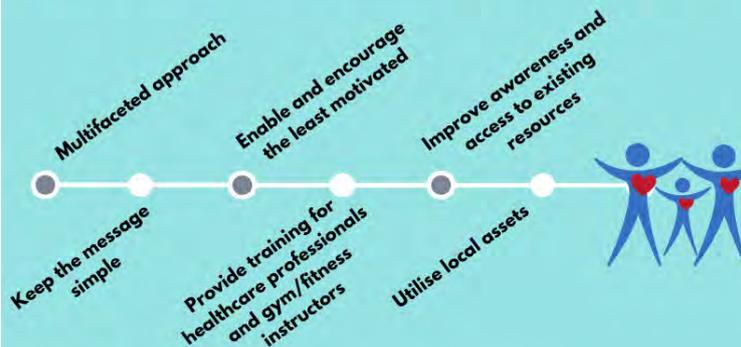
- Lack of capacity to give the support needed
- Personal value of physical activity, confidence and communication skills
- Barriers faced by their patients/clients such as cost, motivation and understanding

Opportunities

LOCALSERVICES
CASESTUDIES
DESMOND
PARKRUN
TRAINING
REFERRALTIME
MOVINGMORE
ONLINERESOURCES
COMMUNICATION
NCSEMCLINICS

Recommendations

- Training for healthcare professionals
- Physical activity 'crib sheet'
- Specialist physical activity services in the NHS
- Campaigns and communication about keeping active



CREATED BY DR HELEN QUIRK, SHEFFIELD HALLAM UNIVERSITY
using www.canvacom - as part of a project funded by Diabetes UK

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2 Research team

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Qualitative inquiry to explore physical activity among people living with diabetes

3 Introduction

In the UK 4.7 million people have diabetes, which has more than doubled in the last twenty years and around 90% of people living with diabetes have been diagnosed with type 2 diabetes (Diabetes UK, 2019). Obesity is the leading cause in the majority of preventable cases (Wu, 2014). The NHS spends at least £10 billion a year on diabetes, equivalent to 10% of the entire budget (Hex et al., 2012). Elevated blood sugar levels can lead to macro and micro vascular complications including kidney failure, sight problems, amputations, strokes and heart attack (The National Cardiovascular Intelligence Network, 2016). The adoption and maintenance of a physically active lifestyle are important for blood glucose management and overall health in individuals living with diabetes (Umpierre et al., 2011). For example, structured physical activities like aerobic activity, high intensity interval training, resistance training and balance/flexibility activities (such as yoga and Tai Chi) (Colberg et al., 2016) can improve blood glucose control, insulin sensitivity, weight loss, lipids, blood pressure, cardiovascular fitness, and quality of life (Sigal et al., 2006). Collectively, these reduce the risk of morbidity and mortality. Less is known about daily movement in people living with diabetes (also known as incidental movement or unstructured physical activity).

Participation in physical activity is also not without its challenges for people living with diabetes (e.g., blood glucose management). Challenges can vary with diabetes type, activity type and presence of diabetes-related complications and as such, recommendations need to be tailored to meet the needs of each individual.

People living with diabetes are advised to take part in moderate to vigorous aerobic activity for ~30 minutes a day with no more than two consecutive days of inactivity (Colberg et al., 2016). Over time activities should increase in intensity, frequency and/or duration to at least 150 minutes a week. Resistance exercise is also recommended two to three times a week (Gordon et al., 2009). People living with diabetes are advised to regularly monitor blood glucose levels, adjust medication and carbohydrate intake and be aware of the possible increased risk of acute or delayed hypoglycaemia (Riddell et al., 2011). Exercise-induced hyper- and hypoglycaemia is more common in people living with type 1 diabetes (Colberg et al., 2016). Recommendations around sedentary behaviour – or behaviours with low energy expenditure – are also advised in addition to increased physical

activity/incidental movement. Literature has consistently shown that people living with diabetes are not meeting recommended levels of physical activity (WHO, 2003). In a 2016 Position Statement, advice to increase daily/incidental movement was offered as an initial stepping stone for individuals who are primarily sedentary or reluctant to participate in anything more structured (Colberg et al., 2016).

Given the importance of physical activity for blood glucose management and overall health in individuals living with diabetes and the potential challenges that they face when trying to adopt and maintain an active lifestyle, this qualitative inquiry sought to capture and understand the lived experience of starting and maintaining an active lifestyle for this population. It also aimed to explore the challenges and opportunities experienced by supporters and healthcare professionals whose role is to advise, encourage and support active lifestyle among those living with diabetes.

4 Research purpose and objectives

The purpose of this project was to explore the barriers, drivers, support and opportunities to being physically active among people living with diabetes. The objectives were:

- To conduct workshops with 20 patients living with diabetes (type 1 and type 2 diabetes);
- To conduct workshops with up to 20 supporters/professionals who have a specialist interest in supporting people with diabetes;
- To bring together the findings to understand the barriers, drivers, support and opportunities to being physically active among people living with diabetes.

5 Ethical approval

The project was granted ethical approval from the local institutional research ethics committee on 10/04/19 (Ethic Review ID: ER14028497).

See Appendix 1 for methods.

6 Findings

6.1 Participants

A total of 15 people living with type 1 diabetes, 16 people living with type 2 diabetes and 16 supporters/healthcare professionals based in Sheffield were involved in this qualitative inquiry.

Table 1 Characteristics of the sample of people living with diabetes

Group	n	Male (M)/ Female (F)	Average age (years)	Ethnicity
Type 1 diabetes workshop	9	M = 1 F = 8	46	White British (9)
Type 2 diabetes workshop	6	M = 5 F = 1	54	White British (3) Indian (1) African (1) Other white background (1)
Type 1 diabetes email respondents	6	M = 2 F = 4	54	White British (2) Caribbean (2) Unknown (2)
Type 2 diabetes email respondents	10	M = 3 F = 7	52	White British (1) Caribbean (3) Pakistani (4) Unknown (2)

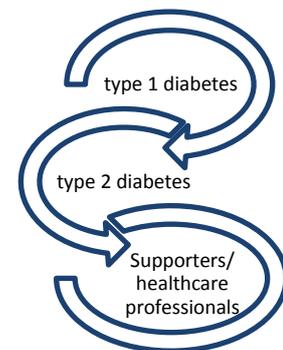
The sample of supporters/healthcare professionals consisted of Diabetes Specialist Nurses (DSNs) (n=8), specialist dietitians (n=4), GP trainee (n=1), health and wellbeing worker (n=1), lifestyle practitioner (n=1), occupational therapist (n=1). Current self-reported physical activity levels ranged from sedentary to fairly active across people living with type 1 and type 2 diabetes.

Key findings: Participant characteristics

- There was a range of ages and activity levels represented among participants living with diabetes
- Participants living with type 1 diabetes were predominantly white British; minority ethnic groups were under-represented
- A better representation of minority ethnic groups was found among participants living with type 2 diabetes

6.2 Barriers to starting and maintaining an active lifestyle

Barriers to starting and maintain an active lifestyle are presented from the viewpoint of people living with type 1 diabetes, people living with type 2 diabetes and supporters/healthcare professionals in turn.



6.2.1 Barriers from the perspective of those living with type 1 diabetes

The barriers to starting and maintaining an active lifestyle among people living with type 1 diabetes are presented as four themes.



6.2.1.1 Blood glucose management and the 'constant threat of hypos'

- Blood glucose management was the main concern for people living with type 1 diabetes, which is consistent with previous research (Brazeau et al., 2008). The need to make adjustments to medication or carbohydrate intake to help prevent the occurrence of acute or delayed hypoglycaemia meant that activities needed to be planned well in advance of the activity.
- People were concerned about the “*constant threat*” of hypoglycaemia when starting and maintaining an active lifestyle. Physical activity participation was often characterised by frequent blood glucose testing before, during and after the activity, carrying glucose and snacking in order to pre-empt and control hypoglycaemia. Certain activities were discussed as particularly problematic for hypoglycaemia. Swimming made it difficult to be aware of the normal body sensations associated with hypoglycaemia because “*you don’t know when you’re getting hot and sweaty*”. Activities done in the evening introduced concerns about overnight hypoglycaemia.
- Frequent testing and snacking introduced other difficulties; i) some people were reluctant to join activity clubs because of the “*social embarrassment*” of having to stop and test/snack, “*worry that people think I’m weak*” and not wanting to hold others back (e.g., cycling club), and ii) extra snacking felt counterproductive for some people and was considered a disincentive if the intention of the physical activity was for weight loss or maintenance.

- This meant that people faced particular challenges with unplanned activities, changes in planned activity, activities that last longer than 45 minutes and underestimating the physiological demand of unstructured daily living activities.
 - *Spontaneous activities* – people described how unplanned decisions to take part in physical activity were difficult to manage due to having not made the necessary adjustments to insulin dosage and carbohydrate intake beforehand. They felt that this resulted in a lack of spontaneity in their physical activity behaviours.
 - *Changes in planned activities* - taking part for a shorter or longer period of time than planned were also difficult to manage because adjustments to medication had already been made.
 - *Longer duration activities* - more attention needed to be put into the planning and preparation for longer duration activities. Two people referred to a shortage of test strips/needles when having to test frequently during longer duration or high frequency activities.
 - *Unstructured daily living activities* - activities like shopping, housework, gardening and camping were described as problematic and often triggers for hypoglycaemia. People presumed that they underestimate the physiological demand of such activities, for example: *“I always hypo in supermarkets because I don’t realise how much I walk”*.

6.2.1.2 Lack of knowledge and awareness among others

- It was clear that self-management of their condition, rather than depending on the support of others, was important to the people attending the workshop. Despite the desire for privacy, they described how a lack of awareness and knowledge amongst others could be a barrier to starting and maintaining an active lifestyle. Three groups of people were mentioned; the general public, gym/fitness instructors and healthcare professionals.
 - *The general public* – concerns were mainly around having a hypoglycaemic episode in public and what people may or may not do to help. There was concern that lack of awareness about how to treat a hypoglycaemic episode could be life threatening. For example, one person explained, *“I’d like the general public to be told that chocolate is not a good hypo treatment”*.
 - *Gym instructors/physical activity providers* – similar concerns were expressed about the possibility of having a hypoglycaemic episode in health/leisure centres, with

people being concerned that staff (e.g., life guards, gym/fitness instructors) would not know what to do to help.

- *Healthcare professionals* – The people in the workshop also questioned whether the healthcare professionals in their diabetes team had the relevant knowledge about physical activity/exercise and diabetes management, *“I wonder how clued up most health professionals are about diabetes and exercise?”* With one person implying that a conversation had never been had, *“I don’t know how knowledgeable they are on exercise, though I’ve probably never asked”*. Another person in the workshop explained how their experience with various GPs over the years had been disappointing due to the GPs limited knowledge of type 1 diabetes.

6.2.1.3 Physical activity advice is lacking in current clinical care

- People at the workshop agreed that there was a lack of attention given to physical activity/exercise in their contact with healthcare professionals. Some had benefitted from attending the DAFNE (diet adjustment for normal eating) course, but the general consensus was that the advice received from healthcare professionals had been minimal. One suggested, *“the health professionals need to be more proactive, they can’t just wait for the person to mention it [physical activity]”*. One workshop attendee suggested that the level of support needed was an unrealistic expectation; *“the NHS can’t afford to offer that individual support”*.
- People in the workshop, after acknowledging that they were all *“fit and healthy”*, queried whether they would get more support from the healthcare team if they were unwell; *“I wonder if we would need more support if we were not as well”*.

6.2.1.4 Other barriers to an active lifestyle

- There were barriers for people living with type 1 diabetes that are similar to those in the general population. These included; other health conditions/comorbidities, lack of energy, injuries, cost, access and lack of time.

6.2.2 Barriers from the perspective of those living with type 2 diabetes

The barriers to starting and maintaining an active lifestyle among people living with type 2 diabetes are presented as five themes. The themes are consistent with previous research (such as, Lidegaard et al., 2016).



6.2.2.1 Time pressures and other commitments

- People living with type 2 diabetes described 'work' and 'family commitments' as being the main barriers to starting and maintaining an active lifestyle. As a result of these other commitments, physical activity and factoring in time for physical activity was simply not a priority.
 - *Work commitments* – people described working long days, shift work and work pressures as barriers to starting and maintaining an active lifestyle. It was common for people in the workshop to describe the other things they could be doing instead of physical activity, such as catching up on work emails and spending time with family.
 - *Family commitments* – people described having caring responsibilities and/or a desire or obligation to spend time with their family rather than taking part in physical activity.
- Given the conflict that participating in physical activity/exercise had on people experiencing these pressures and commitments, physical activity was considered a “chore” or something they felt they ought to do, rather than something they wanted to do.

6.2.2.2 Lack of motivation

- The people living with type 2 diabetes involved in this qualitative inquiry knew the benefits of starting and maintaining an active lifestyle and in many ways knew how they could be keeping active (e.g., walking at lunchtime, taking the stairs instead of the lift, take

movement breaks at work, building structured exercise into their week). The main barrier was motivation and how to make sustainable changes and maintain an active lifestyle.

- The people attending the workshop had benefitted from having had good access to physical activity opportunities, so starting had been easier than maintaining activities. After starting a regular activity, people reported losing interest, motivation, and enjoyment or the onset of injury or pain as demotivating experiences. The onset of tiredness and fatigue was also reported as a common barrier to maintaining an active lifestyle.

6.2.2.3 Low mood, fatigue and other negative feelings

- People attending the workshop described the negative effect that low mood or mood swings had on their ability to start and maintain an active lifestyle. Depression was reported by a small number of people as making physical activity difficult.
- Fatigue (also “tiredness”, “weakness” and “lethargy”) was reported as being a problem. People reported extreme tiredness as not only impeding their ability to be active, but as a negative side effect of increasing their level of activity. After activity, one person described, *“and then you feel tired, the fatigue then crawls in...because when your sugars drop I get uncontrollably tired to the point where I fall asleep in the middle of a conversation”*.
- Other negative feelings experienced by people attending the workshop included guilt, shame and anger related to their diabetes. Anxiety or negative feelings about future health outcomes was also reported; *“sometimes depression is caused by the GP. They will say in 20 years’ time your cardiovascular risk factor has gone up ten times...kidney failure...blood sugar hampering brain cells...so keep on thinking about the complications and it makes you more depressed”*.

6.2.2.4 Limited physical activity support from the healthcare service

- Generally, the people living with type 2 diabetes involved in this qualitative inquiry felt there was a lack of physical activity support in their current clinical care. One workshop attendee likened the annual diabetes review as a tick-box exercise; *“sometimes when we are having the annual review with diabetic nurse, it’s more like a tick-box thing: what is your alcohol consumption and smoking and this thing and the diet, so just as a tick box – there are no suggestions”*. It was common for people in the workshop to refer to finding advice and guidance on the internet, rather than from their healthcare team, which has been found previously (Wilson, 2013).

- Some people in the workshop recounted negative experiences of interactions with healthcare professionals. Being made to feel guilty and feeling judged were reported, alongside the desire for “*non-judgemental support*”.
- A workshop attendee recalled receiving culturally irrelevant advice from the healthcare team with regards diet, “*we don’t have a South Asian nutritionist working in the NHS...so they have suggested a completely different diet*”. Although not discussed in relation to physical activity specifically, the issue being discussed was one of not being given advice that was relevant to the individual person, but generic advice that was sometimes inappropriate.
- Similar to the lack of culturally relevant advice, poor translation services were also reported as a barrier to starting and maintaining an active lifestyle for people with limited English language.

6.2.2.5 Other barriers to an active lifestyle

- There were also reports of language barriers, with some people reporting that not speaking English made physical activity difficult.
- There were barriers for people living with type 2 diabetes that are similar to those in the general population (Trost et al., 2002). These included; other health conditions, injuries, cost, access and the environment (terrain/hills).

6.2.3 Barriers from the perspective of supporters/healthcare professionals

The barriers to starting and maintaining an active lifestyle among people living with diabetes from the perspective of supporters/healthcare professionals are presented as three themes. These themes are broadly similar to previous research from GPs (Chatterjee et al., 2017) and diabetes health professionals (Booth et al., 2013).



6.2.3.1 Lack of opportunity to give the support needed

- Important barriers to the promotion of physical activity perceived by the healthcare professionals related to challenges they faced in their clinical role. These challenges referred to their own capacity to provide physical activity advice to people living with diabetes, which was impeded by lack of opportunity, knowledge and resources.
 - *Lack of opportunities* – healthcare professionals referred to the lack of opportunities to have meaningful discussions about physical activity. Healthcare professionals accepted that facilitating behaviour change required more than single encounters and conversations. A major challenge was the limited time in a clinical appointment and even if there was time (e.g., a one hour appointment for dietitians) physical activity was often not a priority over important discussions about medication, diet and medication side-effects. For example, healthcare professionals perceived their role was more about ‘firefighting’ than prevention, *“you’re always focusing on firefighting, aren’t you, a lot of the time, a lot of GP practices, us [DSNs], you’re looking at what the main issue is, and often activity is further down the list”*. Physical activity was generally only ever mentioned as part of a “tick-box” at an annual review. Healthcare professionals also felt that there was little opportunity to arrange follow-ups to monitor progress and offer ongoing support.
 - *Lack of knowledge* – another barrier for healthcare professionals was not feeling competent in their own ability to be effective at advising about and promoting physical activity among people living with diabetes. Healthcare professionals described having had no education in physical activity at the pre-qualification level and no formal training since. Any knowledge they had about the impact of physical activity or how to effectively promote physical activity to people living with diabetes had been self-learned, part of voluntary/optional training or based on experience.
 - *Resources* – healthcare professionals also perceived a lack of resources available to help them discuss and promote physical activity with people living with diabetes. One area in which the Diabetes Specialist Nurses (DSNs) believed there was no resource was the provision of support for people in care homes living with diabetes. The availability of culturally relevant resources was also perceived to be a problem. The provision of physical activity opportunities in the local community was generally not perceived to be a major problem (perhaps because Sheffield has a physical activity referral scheme under the MoveMore citywide strategy), although supporters and healthcare professionals wanted to see more opportunities specific

to different age ranges, single sexes and cultures. Despite the physical activity referral scheme in Sheffield (SPARS), healthcare professionals acknowledged, *“even that’s getting complicated, because there’s less places available and they are now charging”*. The problem for healthcare professionals was more around not knowing up-to-date information about what community services were available or how suitable they were for people living with diabetes.

- In one of the workshops there was discussion about hospital in-patients and the opportunities to promote physical activity to people living with diabetes staying on hospital wards. The fundamental barrier was that generally people in the hospital setting are too unwell to be thinking about starting and maintaining an active lifestyle. For the staff working on these wards, it is more about keeping people mobile, but with time demands and a stretched workforce, promoting independent mobility around the wards (e.g., to and from the bathroom) is difficult. Another barrier in this context was that ward-based physiotherapists move on to other wards too quickly, so giving them training in how to promote physical activity is not a sustainable solution for the NHS.

6.2.3.2 Personal value of physical activity, confidence and communication skills

- As well as the barriers experienced within the health service, healthcare professionals also recognised how personal barriers could influence their ability and intention to discuss and promote physical activity among people under their care. The value healthcare professionals themselves place on physical activity was perceived to be important. Physical activity is more likely to be brought up in conversation by a healthcare profession if it is important to them; *“it’s about your own priority, it’s your own beliefs...if you think that activity is an important part of lifestyle anyway and you enjoy it”*. This supports previous research showing that healthcare professionals with positive attitudes toward physical activity and higher levels of personal physical activity were more likely to promote physical activity to their patients (Fie et al., 2013).
- Other personal barriers mentioned, although not in great detail were healthcare professionals’ confidence to discuss physical activity, their ability to have motivational conversations with the people they see and their communication skills. There was a suggestion that some healthcare professionals will always be better than others at having difficult conversations about behaviour change, *“thinking about the language of how you talk to people about [physical activity] as well. Making sure you know how to approach it. I had a man who came to see me in clinic, and he was really insulted by his GP”*.

6.2.3.3 Barriers faced by their patients/clients such as cost, motivation and understanding

- A range of the barriers to the promotion of physical activity described by supporters/healthcare professionals were the barriers faced by their clients/patients. Supporters/healthcare professionals could list numerous barriers to physical activity engagement among people living with diabetes not related to the diabetes itself. These included: cost, understanding, language, access, motivation, and value.
 - *Cost* – supporters/healthcare professionals were aware that many of their patients/clients did not have disposable income to spend on physical activities so were reluctant to refer people to schemes/services that would incur a cost. The cost for people to travel to community services was also recognised as a barrier, for example, one supporter said a regular problem involved, *“referring a client to a centre and not able to support them with finances when they say they can’t afford to travel there”*.
 - *Understanding* – the healthcare professionals believed there was misunderstanding among people living with diabetes about what physical activity is, with the common belief being that it had to be structured exercise. This was perceived as a barrier because it instilled a ‘can’t do’ rather than ‘can do’ mentality among many people living with diabetes; *“there is certainly a big group [of patients] who just think that they can’t”*.
 - *Language* – supporters/healthcare professionals found it difficult to find appropriate resources or support for non-English speaking people.
 - *Access* – not having access to appropriate or culturally relevant physical activity was another important barrier for patients/clients. For example, the need for women-only or men-only physical activity opportunities and specific advice for during Ramadan were discussed.
 - *Motivation* – a challenge for supporters/healthcare professionals was when the clients/patients are *“not willing to change”* and therefore not receptive of support or referrals offered to them. Often healthcare professionals would say that their patients were demotivated by the thought of structured or intense exercise like gyms or running. Often physical activity was regarded a chore, or something that people living with diabetes were being made to do.
 - *Value placed on physical activity* – supporters/healthcare professionals recognised that the value placed on physical activity by their clients/patients was important.

When clients/patients lacked any incentive to being physically active, such as not seeing any benefit, it was difficult to place value on the importance of starting and maintaining an active lifestyle.

- Barriers related to diabetes experienced by clients/patients were also mentioned. Knowledge about how to adjust medication and control blood glucose levels around physical activity and worry about hypoglycaemia were discussed as challenges.

Key findings: Barriers to physical activity

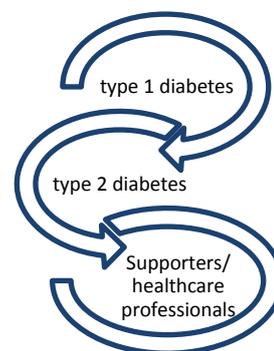
- There are a number of barriers for people living with type 1 diabetes that are specific to the condition and to the healthcare service such as the management of blood glucose level and the clinical advice available.
- The main barriers for people living with type 2 diabetes seem to be more lifestyle and psychosocial than condition-specific.
- Whilst supporters/healthcare professionals perceived the challenges faced by their clients as barriers that impact their ability to effectively promote physical activity (lifestyle, behavioural, psychosocial barriers among people living with diabetes), they also faced personal clinical barriers such as lack of knowledge, training, resources and time.

Despite distinct differences in the findings from each of the groups targeted in this qualitative inquiry, there are some common themes of interest:

- Although people living with diabetes are supported to manage their own condition, they still need the education and support (and tools) to give them the knowledge and confidence about what they need to do.
- Meaningful, empathic and effective conversations about physical activity between healthcare professionals and people living with diabetes are generally not happening. Instead, physical activity discussion is considered a 'tick-box' exercise receiving very little time or follow-up.
- The experience of and barriers to physical activity are closely linked with diet and medication, suggesting that physical activity should not be targeted in isolation, but rather as multimodal lifestyle advice.
- People living with diabetes and supporters/healthcare professionals also face the same barriers related to personal circumstances as people from across different long-term health condition groups and the general population such as cost of activities/level of disposable income, access to culturally relevant activities, energy and time.

6.3 Opportunities that help start and maintain an active lifestyle

Opportunities for starting and maintaining an active lifestyle will be presented from the viewpoint of people living with type 1 diabetes, people living with type 2 diabetes and supporters/healthcare professionals in turn.



6.3.1 Opportunities from the perspective of those living with type 1 diabetes

People living with type 1 diabetes were asked what opportunities they had experienced that had helped them start or maintain physical activity. A wide range of opportunities were discussed.



Diabetes technology (e.g., pump and blood glucose monitoring systems; Freestyle Libre, CGMs) was discussed in detail as something that had helped people start and maintain an active lifestyle. Those using the Freestyle Libre had a particularly strong opinion about how helpful that had been for their ability to manage their blood glucose level around physical activity.

Technology was said to make regular blood glucose testing easier and to help understand how the body reacts to different activities. Technology in the form of internet education and online social forums was also discussed as important, although some people cautioned against mixed messages received from online discussion forums.

Other supportive opportunities included educational courses like the DAFNE course and the ‘hypo awareness’ course, although there was not much focus on physical activity in those courses and the advice was generic rather than individually tailored. Feeling confident to make insulin adjustments in preparation for physical activity was important and people with type 1 diabetes valued support from

healthcare professionals to do this. They also benefitted from learning about daily changes in insulin sensitivity and how the body responds to certain foods. To help blood glucose management, physical activity as part of fixed schedule or routine was easier to manage (e.g., same time, same duration each day/week) because it allowed for the necessary planning and preparation to take place.

Outside of diabetes, encouragement from family, friends and healthcare professionals was valued as helpful. Some people felt safe when being active around “*knowledgeable friends*”, referring to these as “*safety nets*”. Some people placed high value on the role of healthcare professionals, but others were less satisfied with the physical activity support received by the diabetes team. Role models were discussed as good opportunities to help promote physical activity, but participants were in agreement that role models needed to be realistic (i.e., not always high-level athletes) and educational; telling people *how* the role model managed their diabetes in different situations.

Being able to incorporate physical activity into daily life via active travel was an important opportunity for some. Access to free activities or reduced cost activities was important for others. Mental strength was also reported to be helpful in starting and maintaining an active lifestyle.

6.3.2 Opportunities from the perspective of those living with type 2 diabetes



People living with type 2 diabetes were asked what opportunities they had experienced that had helped them start or maintain physical activity. A wide range of opportunities were discussed.

Encouragement from family, friends and colleagues to be active was important for people living with type 2 diabetes. Having company, in the form of a person or pet also provided encouragement and inspiration to keep active.

Diabetes related courses such as DESMOND (Diabetes Education and Self-

Management for Ongoing and Newly Diagnosed) and education via the internet had been helpful for some. Other lifestyle behaviours such as having a healthy diet were helpful for others in starting and maintaining physical activity.

Resources such as ‘Couch to 5k’ (<https://www.nhs.uk/live-well/exercise/couch-to-5k-week-by-week/>) and *parkrun* (<https://www.parkrun.com/>) were valued by those who liked to take on new challenges because they provided something structured to work towards (Reece et al., 2019). Although a large event like *parkrun* could be “scary” for others. ‘Couch to 5k’ was praised for being a gradual progression and helping keep focussed. Goal-setting was important and tracking daily movement via a pedometer or FitBit provided an opportunity to self-monitor progress towards goals.

People with type 2 diabetes felt comfortable being active in places where they did not feel judged. Some people valued home-based, self-paced physical activity and movement breaks at work for convenience and ease. Being able to incorporate physical activity into daily life via active travel or active lunch times was an important opportunity for some. Access to free activities or reduced cost activities was important for others.

People with type 2 diabetes benefitted from having a supportive healthcare team who asked about their physical activity, they felt that GPs and diabetes nurses were critical in providing individualised advice and support. However, others felt judged by healthcare professionals and did not want to be made to feel guilty about where they have “gone wrong”. People living with type 2 diabetes believed that support after diagnosis is needed to give people the tools they need to self-manage their condition; “When all is said and done it’s all about self-management, but I need the tools to help me do it”.

6.3.3 Opportunities from the perspective of supporters/healthcare professionals



Supporters/healthcare professionals were asked what opportunities they had experienced that had helped them to promote physical activity among people living with diabetes. A wide range of opportunities were discussed.

The provision of physical activity opportunities in the local community was regarded a useful opportunity to help promote physical activity to people living with diabetes. Local assets and existing services (such as *parkrun*, SOAR, Zest,

SPARS, and IAPT – see box below) were all referred to as good resources that people with diabetes can be referred to. Although supporters and healthcare professionals wanted to see more physical activity opportunities specific to different age ranges, single sexes and cultures.

Healthcare professionals referred to the importance of identifying the right people within the clinical team to deliver physical activity advice to people living with diabetes. Specific

roles identified were community nurses and healthcare assistants because they were believed to have opportunities (i.e., time) to have meaningful discussions with people. A Lifestyle Practitioner was given as an example of a role within the multidisciplinary diabetes team that provides the opportunity to deliver lifestyle (including physical activity) advice to people living with diabetes (this role has been implemented in Leeds).

Structured education was believed to be an important opportunity to provide advice and guidance about physical activity to people living with diabetes. Type 2 diabetes structured education programmes such as DESMOND, DESMOND BME and DAFNE were offered as important examples.

Training and education for healthcare professionals were mentioned as important opportunities. Although not many training opportunities were discussed, some healthcare professionals were aware of training that would develop conversational and behaviour change consultation skills such as motivational interviewing and health coaching courses.

Healthcare professionals found it helpful to promote small changes to lifestyle and to encourage people living with diabetes to embed movement/physical activity into everyday life. Knowing how best to “sell it” and communicate the messages sensitively was important.

A supporter found it helpful to be able to help clients apply for grants such as ‘Time for a Break’ that may fund opportunities to take part in physical activity as a break from a caring role (see website for more details: <https://sheffieldcarers.org.uk/time-for-a-break/>).

parkrun – organise free, weekly, 5km timed walk/runs around the world. They are open to everyone, free, and are safe and easy to take part in.

SOAR – a Sheffield-based community regeneration charity that provides a range of services designed to improve a person’s health, well-being and employability.

Zest – a community enterprise delivering high quality and responsive services to local people. Deliver a range of integrated community, leisure, health and work support services to adults and children from across Sheffield.

SPARS – Sheffield Physical Activity Referral Scheme

IAPT- The Health and Wellbeing Service can support the wellbeing of people living with diabetes. *Living well with Diabetes* is a course which provides proven ways to reduce stress, anxiety and depression.

The DSNs discussed the valuable opportunity to run clinics for people living with type 2 diabetes within local leisure centres (see image below for a MoveMore centre in Sheffield). The change of environment from hospital to leisure centre was believed to shift diabetes management away from the “medical model” and introduce people living with diabetes to the physical activity opportunities available to them in the community; giving people a “new perspective” on type 2 diabetes as a lifestyle condition rather than an illness. For more details about the National Centre for Sport and Exercise Medicine and embedding



NHS clinics within leisure settings see Tew et al. (2012) and Speake et al. (2016).

Key findings: Opportunities for physical activity

The key opportunities covered four broad areas; technology, social support, healthcare team and access.

- **Technology** in various forms was important for people living with diabetes. Useful technologies included diabetes technologies to manage blood glucose levels like the pump and Lifestyle Libre, other technologies like activity trackers, and online resources (diabetes information websites or support forums). Healthcare professionals also rely on online resources for knowledge and information to help support people living with diabetes.
- **Social support** was also important for people living with diabetes. Support and encouragement from family, friends and having significant others accompany them to a physical activity session helped motivation to continue. Feeling safe during physical activity around knowledgeable, understanding friends was also important. People valued ways of connecting socially to others with diabetes without feeling like they are different, special or attending a self-help group.
- People living with diabetes valued advice and guidance from **healthcare professionals**, emphasising the importance of knowledgeable and non-judgmental interactions. Individuals do differ in their preferences, with some being satisfied by the level of healthcare professional support received and others reporting needing more support. There was a preference for healthcare professionals' recommendations to be individually tailored rather than generic advice.
- **Access** to appropriate activities in the community was absolutely critical. The healthcare professionals in this qualitative inquiry did seem to have good awareness of community based physical activity opportunities, but admitted to finding it hard to keep up-to-date with what is available. People living with diabetes value having activities to go to that feel affordable, safe, non-judgmental and enjoyable.

7 Prioritisation of barriers and opportunities

Workshop attendees and email respondents were asked to prioritise their most important barriers and opportunities. These were broadly consistent with previous research in this area (Lidegaard et al., 2016; Brazeau et al., 2008). The results are presented below.

7.1 Type 1 diabetes

Top barriers	Top opportunities
<ul style="list-style-type: none"> • Spontaneous activity 	<ul style="list-style-type: none"> • Diabetes technology for managing blood glucose level
<ul style="list-style-type: none"> • Hypoglycaemia 	<ul style="list-style-type: none"> • Individualised advice and support
<ul style="list-style-type: none"> • Gym instructor/physical activity provider knowledge 	<ul style="list-style-type: none"> • Education sessions / courses • Learning how the body reacts to different activities

7.2 Type 2 diabetes

Top barriers	Top opportunities
<ul style="list-style-type: none"> • Lack of time (physical activity not a priority due to other commitments) 	<ul style="list-style-type: none"> • Peer support and company
<ul style="list-style-type: none"> • Lack of motivation or self-discipline 	<ul style="list-style-type: none"> • Goals and challenges to work towards
<ul style="list-style-type: none"> • Fatigue and low mood 	<ul style="list-style-type: none"> • Appropriate activities available (e.g., self-paced, free or low cost, group, single sex)
<ul style="list-style-type: none"> • Other health conditions, complications and pain 	

7.3 Supports/health professionals

Top barriers	Top opportunities
<ul style="list-style-type: none"> • Client/person not willing to change 	<ul style="list-style-type: none"> • Referral pathways to appropriate local services
<ul style="list-style-type: none"> • Lack of confidence or skills (communication) in how to advise and support behaviour change on physical activity 	<ul style="list-style-type: none"> • Education – having time to talk to people and their families (DESMOND, DAFNE) and ensuring it is translated into different languages
<ul style="list-style-type: none"> • Lack of capacity (time, opportunity, referral options) to give the support required 	<ul style="list-style-type: none"> • Promoting small changes to lifestyle and embedding movement/physical activity into everyday life

8 Recommendations for Diabetes UK

Workshop attendees and email respondents were asked “how might Diabetes UK support you in addressing that barrier/opportunity?”

8.1 Type 1 diabetes

Recommendation	Problem or opportunity it would target
<p><u>Intensive, individually tailored support</u> Offer people with type 1 diabetes a period of intense, one-to-one support with a diabetes healthcare professional or physical activity specialist involving individualised advice about blood glucose management and physical activity. This could be underpinned by behaviour change theory and could involve a free trial of available technologies such as the Freestyle Libre. It would be a ‘safe place to try new things’ and opportunity for intense learning when the person with diabetes feels ready (e.g., when starting a new physical activity regime). Working closely with local providers, the intense period of support could involve receiving free or reduced rate access to local services.</p>	<ul style="list-style-type: none"> • Hypoglycaemia • Individualised advice and support • Education sessions / courses • Learning how the body reacts to different activities • Diabetes technology for managing blood glucose level
<p><u>Specialist training for gym/fitness instructors</u> Develop and/or fund a specialist training course for gym/fitness instructors akin to the ‘Level 4 Specialist Exercise Instructors qualification for obesity and diabetes’ or a ‘bolt on’ module about diabetes to existing courses that would provide the relevant expertise in type 1 diabetes (e.g., medication types and side-effects, how to treat hypoglycaemia).</p>	<ul style="list-style-type: none"> • Gym instructor/physical activity provider knowledge
<p><u>Discounted memberships and entry fees</u> Work with local providers to arrange for discounted memberships and entry fees for people living with diabetes, ensuring that staff at the facilities had received relevant training.</p>	<ul style="list-style-type: none"> • Gym instructor/physical activity provider knowledge • Learning how the body reacts to different activities

Other recommendations provided by people living with type 1 diabetes in this qualitative inquiry included: education for healthcare professionals; reduce the criteria for getting a Freestyle Libre; make the availability of new technologies a priority; conduct more research into the effect of everyday life activity on blood glucose management; focus on prevention of complications; work with *parkrun* to develop something like the ‘5k your way: MOVE against cancer’ initiative (<https://5kyourway.org/>) for people living with or affected by diabetes; develop an App to support physical activity; appoint community ambassadors to act as educators, buddies and role models for other people living with type 1 diabetes.

8.2 Type 2 diabetes

Recommendation	Problem or opportunity it would target
<p><u>Workplace initiatives</u></p> <p>Work with employers to develop workplace policies or strategies that promote physical activity among employees, especially those living with type 2 diabetes. Within this strategy, physical activity would be encouraged across the workplace and employees would be advised to schedule in movement breaks as part of their daily work plan. Physical activity champions within the work team could encourage and coordinate physical activity opportunities within the working day. In reviews/one-to-ones, line managers would ask employees ‘what are you doing for yourself?’, with emphasis on taking time to manage health and pressure/stress at work. Part of the offer could be workplace physical activity initiatives such as lunch time walk groups and discounted group activities. In an ideal world, electronic bikes could be available for staff to use for active travel and/or outdoor gym facilities to use during the working day.</p>	<ul style="list-style-type: none"> • Lack of time (physical activity not a priority due to other commitments) • Peer support and company • Lack of motivation or self-discipline • Appropriate activities available (e.g., self-paced, free or low cost, group, single sex)
<p><u>Availability and accessibility of activities and services</u></p> <p>Increase the availability and accessibility of activities or services on offer to people living with diabetes in the local community. Ensure that people have access to simple physical activities that do not bring on or exacerbate fatigue. Ensure that people delivering the activities are appropriately trained to support people living with diabetes and any other health conditions/complications they present with. Provide opportunities to meet with others to share experiences, acknowledge low mood or talk about feelings, but challenging the stigma associated with ‘self-help’ groups or rhetoric of how groups are promoted. If these services are already available but not being used (e.g., IAPT Living Well with Diabetes), explore whether this is an issue with referral or with uptake.</p>	<ul style="list-style-type: none"> • Appropriate activities available (e.g., self-paced, free or low cost, group, single sex) • Other health conditions, complications and pain • Fatigue and low mood
<p><u>Individually tailored physical activity programme/App</u></p> <p>Develop and implement a programme for people living with type 2 diabetes to follow that would include regular check-ins, progressive physical activity challenges or daily targets (e.g., step count), goal-setting and self-monitoring, diet advice and log, platform for linking up with others in the local diabetes community, information about local services and where to go for support. This programme would be individually tailored to meet the needs of people living with type 2 diabetes, taking into consideration their level of ability, time availability and other health conditions. It would be delivered via physical activity</p>	<ul style="list-style-type: none"> • Lack of time (physical activity not a priority due to other commitments) • Peer support and company • Lack of motivation or self-discipline • Goals and challenges to work towards • Fatigue and low mood • Appropriate activities available (e.g., self-paced,

specialists (trained appropriately), DSNs or community diabetes champions. Link this programme with long-term monitoring of blood glucose control via HbA1c to demonstrate potential reversibility of type 2 diabetes. Include education on causes and management of fatigue. Given the appeal and current use of technologies by people living with diabetes, delivering this via an App would be useful.	free or low cost, group, single sex) <ul style="list-style-type: none"> • Other health conditions, complications and pain
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Other recommendations provided by people living with type 2 diabetes in this qualitative inquiry included: education about the physiological response to physical activity; training GPs in how to give culturally relevant advice (especially diet advice); training gym/fitness instructors in diabetes management; fund local services/organisations that are supporting communities already (e.g., Darnall Wellbeing); financial support for people who cannot afford clothes, equipment or travel costs; focus on schools (prevention); host regular meetings/gathering for people living with diabetes.

8.3 Supporters/healthcare professionals

Recommendation	Problem or opportunity it would target
<p><u>Training healthcare professionals</u></p> <p>Develop physical activity training courses for healthcare professionals who will work with people living with diabetes. Training should be embedded at the undergraduate level, part of mandatory training and regular CPD top-up courses. Training should aim to develop confidence in delivering advice, knowledge about what advice to give, experience of giving advice, awareness of the research evidence and local assets in the community, value of physical activity and communication skills (including physical activity prescription and empathy). The language used by healthcare professionals needs to support self-efficacy and increase confidence of the people in managing their condition. If training of all healthcare professionals in the diabetes team is unrealistic, then we should first identify who is the right person within the diabetes to deliver this advice, or does it require a new role to be developed e.g. Sport/ Exercise Science graduates. Prioritise training of health professionals or new job roles in areas with high prevalence of type 2 diabetes.</p>	<ul style="list-style-type: none"> • Client/person not willing to change • Lack of confidence or skills (communication) in how to advise on physical activity • Education – having time to talk to people and their families (DESMOND, DAFNE) and ensuring it is translated into different languages • Promoting small changes to lifestyle and embedding movement/physical activity into everyday life
<p><u>Informational resource or “crib sheet”</u></p> <p>Develop an informational resource or “crib sheet” that summarises the available evidence on the benefits of physical activity for people living with diabetes and the recommended level of physical activity. This should target healthcare</p>	<ul style="list-style-type: none"> • Lack of confidence or skills (communication) in how to advise on physical activity • Education – having time to talk to people and their

<p>professionals and their patients and be used as a prompt, way to save time during appointments and source of education. DSNs suggested that a standardised rather than individualised crib sheet on adjusting medication could be provided, which would be useful for exercise professionals without a background in medication e.g., gym/fitness instructors. The crib sheet needs to be culturally sensitive, or have adapted versions for different cultures (e.g., advice for Ramadan). Written materials need to have appropriate health literacy to target all audiences. It needs to provide simple, real world examples, e.g., “being active for 30 minutes a day can reduce your blood glucose / HbA1c by...”. It needs to move away from structured exercise recommendations and promote small changes to lifestyle like active travel, movement breaks and less sedentary behaviour.</p>	<p>families (DESMOND, DAFNE) and ensuring it is translated into different languages</p> <ul style="list-style-type: none"> • Lack of capacity (time, opportunity, referral options) to give the support required • Promoting small changes to lifestyle and embedding movement/physical activity into everyday life
<p><u>Specialist physical activity services</u></p> <p>Invest in specialist physical activity services for people living with diabetes. This could involve embedding a physical activity specialist or Lifestyle Practitioner into the diabetes healthcare team (primary and/or secondary care). The role of this specialist would be to assess physical activity level, advise, motivate, conduct regular follow-ups and deliver educational workshops. The specialist would refer people to local services and offer a programme similar to cardiac rehabilitation. Investing in this role would encourage healthcare professionals and people living with diabetes that physical activity is as important as diet and medication. Investment should also be made into working with local physical activity providers and training gym/fitness instructors in diabetes management (type 1 and type 2 diabetes).</p>	<ul style="list-style-type: none"> • Referral pathways to appropriate local services • Lack of confidence or skills (communication) in how to advise on physical activity • Lack of capacity (time, opportunity, referral options) to give the support required • Promoting small changes to lifestyle and embedding movement/physical activity into everyday life
<p><u>Campaigns and communication</u></p> <p>Campaigns and health communication that targets healthcare professionals and people living with diabetes to promote the importance of physical activity. Such campaigns/communications will make it clear that physical activity is just as important as medication and diet for people managing diabetes. Part of the campaign should involve the production of posters and leaflets so not to rely solely on the internet and social media. Campaigns should be culturally relevant in terms of surface structure (photos) and deep structure (deeper cultural values).</p>	<ul style="list-style-type: none"> • Client/person not willing to change • Promoting small changes to lifestyle and embedding movement/physical activity into everyday life

Other recommendations provided by supporters/healthcare professionals in this qualitative inquiry included: focusing on prevention (targeting workplaces, families, schools and big companies); DESMOND available in all neighbourhoods; provision of exercise classes/sessions on hospital wards; interpreters for education courses and materials; run clinics from within leisure centres; work with

local voluntary services and organisations; focus on the provision of physical activity in care homes; incentivise attendance at physical activity sessions.

9 Opportune moments for support

Across all groups involved in this qualitative inquiry, there was consensus that any time was the right time for support with starting or maintaining physical activity. Whilst after diagnosis was identified as a key time to make lifestyle changes, caution should be made about over-burdening people with advice and information, especially those being diagnosed with type 1 diabetes. People living with type 1 diabetes were more in favour of physical activity support “*when the person feels ready*” after diagnosis. There was agreement that support needs to be ongoing and not a one-off conversation. Given that many people involved in this project discussed the need for support to take a more preventative approach, opportune moments for support around physical activity would be before diagnosis; targeting schools, families and workplaces with health campaigns and education.

10 Suggested priorities for Diabetes UK

These are our suggestions for Diabetes UK based on the evidence collected in this qualitative inquiry. We acknowledge that viability of these suggestions will be dependent on available resource.

Implement a multifaceted approach

‘Demedicalise’ physical activity for people living with diabetes by working with:

- individuals in a person-centred way
- families and encouraging sustainable lifestyle changes across key health behaviours (diet, sleep, movement)
- communities to utilise and build upon existing local assets
- physical activity providers and services to improve access and uptake
- workplaces to change policy to encourage employers to invest in their employees’ health

Consider Sheffield's NCSEM and MoveMore strategy as an exemplar model

Enable and encourage people and healthcare professionals

Enable physical activity by creating the infrastructure and supportive environment (e.g., healthcare professional training, resources, referral pathways)

Invest in those who are lower in activation or motivation to change. Look not only at the quantity of motivation (i.e., motivated or not), but consider the quality of motivation (intrinsic/extrinsic) (Sebire et al., 2018)

Promote person-centred care to encourage autonomy and empower people to make changes for themselves

Consider taking learnings from *patient activation* and *motivational interviewing*

Change the dialogue: Keep it simple

Support people to understand what constitutes an active lifestyle and encourage small but meaningful changes to their existing lifestyle

Explore the wider lifestyle challenges for people living with diabetes –e.g., difficulties faced doing everyday tasks like housework

Keep it simple – ‘exercise’ can be overwhelming and cause people to disengage

Develop a ‘can-do’ approach to physical activity promotion - rather than it being perceived as a problem

Ensure recommendations to reduce prolonged sitting are a valued part of physical activity promotion

Ensure the message is consistent across healthcare professionals and other resources

Provide healthcare professionals and gym instructors with the toolkit

Train and equip healthcare professionals (pre- and post-qualification) with the knowledge, confidence and opportunity to promote physical activity

Acknowledge/incentivise training with qualifications and CPD points

Create a new role within the clinical team for a physical activity specialist (for an example, see Leeds Lifestyle Practitioner role)

Embed physical activity into routine appointments and develop a standardised "crib sheet" for type 2 diabetes

Train gym/fitness instructors to equip them with the relevant expertise to work with people living with diabetes

Improve awareness of and access to existing resources

Where resources already exist, but are not being used, it is important to understand why. It may be important to explore:

- the criteria for technologies like Lifestyle Libre and how to improve access for people living with type 1 diabetes
- the cultural appropriateness of the information and services
- the need to ensure that resources are translated into different languages – with attention to different dialects
- the time dedicated to physical activity in the DESMOND/DAFNE courses and whether these courses are available to all communities

Build upon community assets

If the provision is already there, don't reinvent the wheel, but instead:

- explore healthcare professionals' awareness of what is available in the local community
- establish a database of available providers/services, keep it up to date and make it easy for people to use
- work closely with community champions to ensure that services are appropriate
- establish and promote the use of physical activity referral schemes (for an example, see Sheffield Physical Activity Referral Scheme SPARS)
- monitor and evaluate the impact of referral schemes and use of local services

11 Caveats of this report

Future projects seeking to explore the perceptions of people living with diabetes and/or healthcare professionals should allow for enough time to attain the relevant approvals needed to recruit participants via the NHS (e.g., through clinics). The findings of this qualitative inquiry should be interpreted with consideration to the potential sample bias. The attendees to the workshops may not represent the wider population of people living with diabetes. One person in the workshop for people living with type 1 diabetes acknowledged, *“there’s a bias in this room, because we’re all fit and healthy”*. We believe the email responses provided a wider representation of backgrounds and we credit this to the recruitment channel via Darnall Wellbeing, a local organisation helping people of Darnall and surrounding areas access health services. A multi-lingual project manager at Darnall Wellbeing assisted in collecting data from people who may not otherwise have engaged.

12 Conclusions and researcher reflections

Many, if not all, of the findings presented in this report support the large amount of research that has been conducted in this area already. Primary studies and review studies have demonstrated the range of barriers and facilitators to physical activity among people living with diabetes and the barriers faced by health professionals and supporters in promoting it. Previous research has also focussed on the ethnic minority groups living with diabetes that we have been unable to represent in this project due to recruitment limitations (e.g., Lawton et al., 2005). In addition, Position Statements and Consensus Statements have provided useful up-to-date guidelines on exercise management for people living with diabetes (see Colberg et al., 2016; Riddell et al., 2017). Many parallels can also be drawn from research exploring the barriers to physical activity found in the general population (Borodulin et al., 2016). The findings from this qualitative inquiry serve to support and strengthen this existing evidence base.

Resource should now be focussed on responding to the needs of people living with diabetes and supporters/healthcare professionals. Perhaps it is time for a new approach and we have made some suggestions for these in Section 10, including; training for healthcare professionals, a new physical activity specialist role in the diabetes team, training for gym/fitness instructors, improving awareness of and access to existing resources and building upon community assets.

To summarise, we have suggested that Diabetes UK prioritise a multifaceted approach that looks beyond individuals, but at the bigger picture; families, communities and workplaces. We recommend that resource might be better focussed on understanding people's motivation or activation and that

a person-centred approach to understanding the wider lifestyle challenges for these people and how to support autonomy in their self-management might be beneficial. We suggest that keeping the dialogue simple might help people adopt a 'can-do' approach, moving away from a 'you ought to do more exercise' model, to thinking about how physical activity can be embedded into everyday life. Fundamental to this solution-focused, value-driven approach working is the need for training of healthcare professionals or establishing a new role within the diabetes team whose focus would be on advising on physical activity, providing intensive, individually tailored support and referring to local or home-based physical activity opportunities. We believe this might take the pressure of healthcare professionals and the current need to 'make every contact count'. We also emphasise the need not to recreate the wheel and instead fund and increase the profile of the services and provision already available in the community. Utilising local assets and bringing it all together under one key point of reference would streamline the referrals to community physical activity programmes. Finally, having a workforce of trained gym/fitness instructors on the 'frontline' delivering the physical activities may address some of the barriers experienced by healthcare professionals and people living with diabetes.

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Appendix 3

Diabetes UK: Qualitative Research

with people with diabetes and relevant healthcare professionals, to understand barriers, drivers, support and opportunities to being physically active.

Report submitted by Brunel University London



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Executive Summary

Introduction

Diabetes UK commissioned Brunel University London to design, deliver and analyse primary qualitative research with people living with diabetes and relevant healthcare professionals. The overall aim of the research was to understand barriers to, and drivers, support and opportunities for being physically active for those living with diabetes. The research was conducted in the period March-May 2019 and involved semi-structured telephone interviews with people living with Type 1 and Type 2 diabetes and healthcare professionals working to support people living with the condition.

Methods and Participants

Exploratory interviews (telephone) were employed to explore barriers to, and drivers, support and opportunities for being physically active for those living with diabetes. Twelve participants living with Type 1 diabetes, thirteen participants living with Type 2 diabetes and sixteen healthcare professionals provided interview data. Interviews allowed those living with diabetes to reflect on and discuss their understanding and views of physical activity as well as describe and discuss their experience. For healthcare professionals, the exploratory approach involved conversations on past and current practice, to discuss how physical activities could be delivered to people living with diabetes and to consider physical activity behaviour change care pathway development in their work

Headline Findings

Barriers that prevent people living with diabetes from becoming more physically active

Barriers to physical activity identified in this project by people living with diabetes and healthcare professionals included: the negative psychological impact of being diagnosed with diabetes, a lack of knowledge about physical activity and the benefits of a physically active lifestyle, limited opportunities for physical activity, fear of hypoglycaemia, a focus on weight loss and diet advice, and wider challenges of living with a chronic health condition including additional health problems.

Drivers motivating people living with diabetes to become more physically active

The drivers motivating people living with diabetes to become more physically active were identified in this study as: accepting diagnosis and taking control over the management of diabetes and having access to physical activity services tailored to peoples' needs and desires and supportive of those diagnosed with diabetes.

Resources and tools to help people living with diabetes to overcome the barriers to physical activity

Resources and tools suggested as ways of helping people living with diabetes to overcome the barriers to physical activity included: accurate and effective sources of information about the role of physical activity in diabetes management, knowledge exchange between healthcare and physical activity professionals to develop effective provision and referral strategies, preparing for hypoglycaemia during exercise and accessing technological advances in the management of diabetes but also in communication and monitoring strategies for physical activity.

The role of Diabetes UK in supporting people to become more physically active

Diabetes UK has a role to play in supporting people to become more physically active including: working with GP services more effectively for knowledge exchange and promotion of physical activity, promoting community services for physical activity, ensuring person-centred approaches to physical activity prescription and promotion and increasing awareness of the benefits of, services for and management of diabetes through physical activity.

How others can support people living with diabetes to become more physically active

A network of people including medical experts, healthcare professionals, physical activity specialists and friends and family can support people living with diabetes to become more physically active. Such support can include concise and accurate information about the role of physical activity in diabetes management, continuity of care for those living with diabetes, holistic guidance on physical activity, tailored and targeted physical activity services and training for physical activity specialists in the contribution of physical activity diabetes management.

Conclusions and recommendations

Taking part in regular physical activity can help people living with diabetes to manage their condition as well as reduce the risk of Type 2 diabetes in the population more broadly. The findings of this study identify that people living with diabetes can find it challenging to become more physically active. In this study, barriers to physical activity included the negative impact of diagnosis, lack of knowledge about physical activity, limited opportunities for physical activity, fear of hypoglycaemia and a focus on weight loss and diet in the management of the diabetes. Participants in the study did recognise the benefits of physical activity and wished to be more physically active. Accepting their diagnosis and taking control of managing the condition, alongside the provision of tailored and supported physical activity were identified as significant in motivating people living with diabetes to move more. Resources and tools for helping people living with diabetes become more active included the development of mechanisms for knowledge exchange about physical activity benefits and services, preparing for hypoglycaemia and access to technological advances for diabetes management and care. In addition, our findings illustrate the importance of developing and maintaining effective communication between medical and community services to support those living with diabetes to lead active lifestyles and ensuring access to accurate information about, and high-quality tailored physical activity services.

To address these issues our overarching recommendations are for **partnership working** between community physical activity and medical services and those living with diabetes, the inclusion of **physical activity pathways** in existing diabetes management strategies, **tailored and targeted physical activity** provision, **accurate messaging** about physical activity and diabetes and **training for physical activity specialists** about diabetes and the role of physical activity.

Section 1: Introduction

Diabetes UK commissioned Brunel University London to design, deliver and analyse primary qualitative research with people living with diabetes and relevant healthcare professionals. The overall aim of the research was to understand barriers to, and drivers, support and opportunities for being physically active for those living with diabetes. The research was conducted in the period March to May 2019 and involved semi-structured telephone interviews with people living with Type 1 and Type 2 diabetes and healthcare professional working to support people living with the condition.

This report has four sections. *Section 1* provides an introduction and background to the project. *Section 2* details the research approach, describing the participants and methods of data collection analysis. *Section 3* presents the research findings and *section 4* provides conclusions and recommendations.

1.1 Background

There is established evidence for the benefits of physical activity for those living with diabetes. For example, getting active and staying active are known to support the management of diabetes and reduce the risk of Type 2 diabetes¹. Moreover, becoming and being active is associated with wider physical and mental health and wellbeing benefits including reduced risk of cardiovascular diseases, some types of cancer, depression, anxiety and enhanced quality of life, happiness, a sense of meaning and purpose in life and improved social connections^{2, 3}. As is reflected in Diabetes UK's recent review and summary, taking part in physical activity for those living with diabetes can be challenging^{4, 5}. There are barriers including issues of work and time, costs and access, and fear, anxiety and stigma. This does not mean that those with diabetes do not want to participate and lead an active lifestyle. People living with chronic conditions often identify the potential enjoyment, sociability, health and wellbeing benefits as motivators for participation but are unsure about taking the first steps to an active life and require tailored support for doing so. Examining in detail the barriers, motivators and facilitators for providing opportunities and support for physical activity with those living with diabetes and relevant healthcare professionals has potential to inform policy and practice in this area. It also has wider significance for other organisations in the Richmond Group of Charities, whose work focuses on the role of physical activity in managing and preventing chronic conditions.

The commissioning of primary research to produce qualitative insights into the knowledge and understanding of physical activity in those living with diabetes and relevant health care professionals is timely, innovative and paramount in building the evidence base about the value of physical activity in changing lives and communities. We recognise in this report the

timeliness of Diabetes UK's attention to these issues within a community in which physical activity, health and wellbeing issues, needs and service delivery are under-researched. The findings of this study can inform the development of policy and practice about physical activity for those living with diabetes and those healthcare professionals working to support them.

Section 2: Research Approach

2.1 Exploratory interviews

Within the project timescales we originally proposed to employ our established focus group methods, designed and tested for examining the barriers, motivators and facilitators associated with sport and physical activity in diverse population groups. We emphasised in our proposal that our experience of recruiting people in the sport, physical activity and public health sector has demonstrated a challenge in bringing large numbers together for group discussions. Given the short timescales of this project we provided for one-to-one telephone interviews (30 minutes each) and utilised this method of data collection for all participants in the project.

The interviews were exploratory allowing those living with diabetes to narrate their personal experiences in which they could both reflect on their understanding and views of physical activity as well as describe and discuss their experience. For healthcare professionals, the exploratory approach also involved conversations to reflect on past and current practice, to discuss how physical activities could be delivered to people living with diabetes and to consider physical activity behaviour change care pathway development in their work. Interviews were conducted by skilled facilitators, recorded using specialist research recorders, and transcribed verbatim by a professional transcriber. Interviews lasted for between 16-56 minutes and provided around 17 hours of participant data. The average interview length was 30 minutes.

This approach is informed by recognised principles and theoretical frameworks for community participatory research^{6, 7} and offered:

- a way of developing a one-to-one dialogue with people living with diabetes that embed each of the Diabetes UK questions on barriers, motivators and facilitators associated with physical activity
- a way of developing a one-to-one dialogue with healthcare professionals that embed each of the Diabetes UK questions on barriers, motivators and facilitators associated with physical activity

- a collaborative method based on reciprocal learning between researchers, healthcare professionals, participants and policy-makers and a focus on taking action on findings
- a way of including discussion and assessment of established theoretical frameworks and care pathways for physical activity behaviour change
- the inclusion of on-going data analysis for preliminary and end of project reporting and consideration of translation, dissemination and mobilisation of knowledge appropriate for policy and practice goals
- an ethically-established exploratory (semi structured) interview format to facilitate timely ethics submission and agreement at Brunel University London.

2.2 Participant recruitment

People living with Type 1 and Type 2 diabetes and healthcare professionals working to support them were purposively⁸ recruited through an advert and expression of interest form placed on the Brunel University London website and promoted through social media (twitter) accounts including @BrunelResearch and @Diabetes UK and those of academic scholars working on the project. Participants were also recruited through networks of professional practitioners already established at Brunel University London and through snowballing⁹ techniques in which study participants recruited others through their own personal contacts.

Twelve participants living with Type 1 diabetes provided interview data about their experiences of physical activity. This included eight adult participants living with Type 1 diabetes only, two healthcare professionals also living with Type 1 diabetes, one healthcare professional who was also a parent of a child (9 years) living with Type 1 diabetes and one parent of a child (11 years) living with Type 1 diabetes.

Thirteen participants living with Type 2 diabetes provided interview data about their experiences of physical activity. This included twelve adult participants living with Type 2 diabetes only and one healthcare professional also living with Type 2 diabetes.

Seventeen healthcare professionals provided interview data about supporting people living with Type 1 and Type 2 diabetes to become physically active. One of these was also a parent of child (9 years) living with Type 1 diabetes and provided interview data about their caring and supporting role. Two healthcare professionals were living with Type 1 diabetes and provided interview data on their experiences.

A summary of the demographic profiles of participants involved in this project is provided in the next section

2.3 Summary of participant profiles

Table 1 Participant profiles (self-defined) – people living with Type 1 and Type 2 diabetes

People living with Type 1 diabetes				
Pseudonym	Gender	Age	Activity Level	Ethnic group
Gail	Female	40-44	Very active	White
Henry	Male	16-24	Very Active	White
Nigel	Male	40-44	Very active	White
Rebecca	Female	25-29	Rarely active	White
Mike	Male	30-34	Very active	Prefers not to say
Debbie	Female	40-44	Moderately Active	White
Kay	Female	40-44	Moderate to low active	White
Jim	Male	65+	Moderately Active	White
Emma Parent Interviewed	Female	11	Very active	White
Note Lucy and Jo (HCPs) also included interview discussion about their experiences of living with Type 1 diabetes and physical activity (see table 2 for participant profiles)				
People living with Type 2 diabetes				
Jack	Male	30-34	Very active	Black/Black British/ African/Caribbean
Don	Male	50-64	Moderately active	White
George	Male	50-64	Moderately active	White
Maggie	Female	50-64	Moderately active	Black/Black British/ African/Caribbean
Kalya	Female	50-64	Rarely Active	Asian/Asian British
Amy	Female	50-64	Very active	White
Rob	Male	65+	Moderately active	White
Farha	Female	35-39	Rarely Active	Asian/Asian British
James	Male	65+	Moderately active	White
Kim	Female	65+	Moderately active	White
Rick	Male	50-64	Rarely active	White
Colin	Male	65+	Rarely active	White
Note Susan (HCP) also included interview discussion about experiences of living with Type 2 diabetes and physical activity (see table 2 for participant profiles)				

Table 2 Participant profiles (self-defined) – healthcare professionals supporting those living with Diabetes

Pseudonym and job role	Gender	Age	Activity Level	Ethnic Group
Val Podiatrist	F	30-34	Active	White
Clare Diabetes UK group leader (volunteer)	F	50+	Moderately Active	White
Diane Dietician	F	40-45	Moderately Active	White
Liam Hospital doctor & GP trainee	M	18-29	Moderately Active	White
Bill Walk leader	M	65+	Moderately active	White
Tara GP	F	40+	Moderately Active	White
Paula Parent/carer	F		Active	White
Vicky Diabetes team lead	F			White
Jo Health & Wellbeing Manager (Type 1 diabetes)	F	45+	Active	White
Jane GP trainee	F	30-34	Moderately Active	White
Nicola Physiotherapist	F	35-39	Moderately Active	White
Dervla Practice Nurse	F	40-44	Moderately Active	White
Jill GP	F	40-45	Moderately Active	White Chinese
Lucy Doctor, emergency medicine trainee, (Type 1 diabetes)	F	18-29	Very Active	White
Amy Health Advisor Primary Care, Walk Lead (Prediabetes)	F	50-64	Moderately Active	British Asian
Susan Health Advisor, (Type 2 diabetes)	F	50-64	Active	Black African

2.4 Data analysis and interpretation

Qualitative data were analysed using the key principles of thematic analysis^{10, 11} to allow the organisation, detailed description and interpretation of patterns of meaning. Preliminary analysis was guided by the requirements of Diabetes UK to understand barriers, motivators and facilitators associated with physical activity from the perspective of those living with diabetes and healthcare professionals supporting them. Further in-depth analysis involved repeated reading of interview transcripts, by researchers, to determine the details of the data and to enable identification of key sub-themes¹² associated with barriers, motivators and facilitators. Themes were, therefore, identified by a combined focus on our analytical interest in the ways in which those living with diabetes and healthcare professionals supporting them experience physical activity and by inductive (data-driven) approaches drawing directly from the data produced.

2.5 Ethics

Ethical approval for the project was obtained from Brunel University Research Ethics Committee on 29th March 2019 (Ref: 16632-LR-Mar/2019- 18674-1). An ethics amendment was approved by the ethics committee on 11th April 2019 to agree the use of exploratory interviews for all participants (Ref: 16632-A-Apr/2019- 18841-1).

Section 3: Research Findings

3.1 Headline Learning: the barriers that prevent people living with diabetes from becoming more physically active

3.1.1 Impact of diagnosis

Participants living with both Type 1 and Type 2 diabetes, and healthcare professionals supporting them, reported that being diagnosed with a chronic health condition was deeply emotional. For both groups of participants, diabetes was described as life-changing and for some life-threatening. Such an experience necessarily led to the need to develop psychological coping strategies and lifestyle behaviour change. For some, the challenge of coping with their diagnosis was a barrier to becoming physically active if they had previously been inactive because they feared taking part and were unsure of the impact on them.

I think the psychological impact of diabetes is very much understated, I think many people find the prospect, even of just a Type 2, of living on a diet for the rest of their lives[and exercising]... just very, very difficult to adjust to. (Type 1, Jim)

The diagnoses it sort of just changed everything and it was just something really big to get used to, so I think it sort of took over my life ... I don't know, it did impact it just hugely, so exercise sort of became like ...it wasn't my priority....I didn't really do any exercise ...[to start with] (Type 1, Henry)

For others the diagnosis was in fact a motivating factor in helping them to develop an active lifestyle and redefine a healthier life with diabetes.

basically what I've done is I've changed my lifestyle because I've decided that the only way to embrace this [diagnosis] and to come back is just to be more physically activeand lose weight....so I don't have to worry about the long-term effects of diabetes (Type 2, James)

3.1.2 Knowledge about physical activity

Participants in the study reported that becoming more physically active when living with diabetes required them to understand their own condition and the beneficial effects of physical activity. Our participants suggested that expert knowledge about Type 1 and Type 2 diabetes was provided by key healthcare professionals such as GPs and practice nurses who also offered an effective service for monitoring the condition. However, it was suggested that living with diabetes was best managed when individuals were able to understand the importance of a physically activity lifestyle.

There have been timesin my life ...when I put on weight and ...control wasn't the best probably. Then I went on a Daphne Course ...the learning was a game changer really ... I started to lose weight that I became interested in exercise, which now turned me into a bit of a health freak (Type 1, Gail)

Well it's simply that one has made a commitment to go along and talk to these people [HCPS and others living with diabetes], they have a certain involvement in you, and consequently you feel you're part of the process... it just gives you that little push to get you started again ...[to learn] to be more active (Type 2, Colin)

Interviews also revealed that whilst community provision of diabetes support groups was important, organisations like schools and leisure facilities could improve the understanding of their staff about living with diabetes and the beneficial role of physical activity.

I had no physical activity at school at all, none at all, because nobody was prepared to take the responsibility for the sickly child (Type 1, Jim)

Ah yes school teachers don't knowand it's frightening if a child has a hypo at school ...I have to make sure I am there during school trips for example (Type 1 child, Dervla HCP and parent)

I've done numerous exercise classes over the years....I had a really big hypo, and the guy came over to me and said why did you stop?.....and I went, ooh I'm Type 1 diabetic, he went, OK, please sit there, don't move and he like stopped the class to check, which is fine, but at the same time you go, I

don't want you to stop the class because you're highlighting the fact that I'm not normal (Type 1, Kay)

3.1.3 Limited opportunities for physical activity

Several participants reported that provision of physical activity opportunities was limited for them. This issue is connected to a lack of knowledge about living with diabetes and physical activity identified in the previous section but also to practical issues of time and cost and to a lack of community-based communication about services.

I would have loved to go swimming and do some of that physical activities in the gym but because of the cost, that has been a very difficult thing for me to do (Type 2, Maggie)

You know it's like sometimes I felt as though my National Health team at [place name] weren't actually listening to me, you know when I voiced my concerns and I did ask about are there any programmes that I can go on for dietary..or exercise.. advice, but very often the programmes happened at times that were inconvenient to me or you know just you know ... just were too short actually (Type 2, Amy)

Well I have looked into ... I have looked into support groups and there are none in [place name], I can tell you (Type 2, Amy)

3.1.4 Fear of hypoglycaemia

Our interviews explained that fear and worry about having a hypoglycaemic event (hypo) during physical activity was a barrier to taking part perhaps more so for those living with Type 1 diabetes than Type 2.

I find it really difficult [living with diabetes and exercising] and I get very anxious because I get worried ... I live on my own and I get worried that if I have a hypoglycaemic attack when I'm out and about.... that nobody is going to be able to know what to do when I ask to help or if I'm able to ask for help (Type 1, Henry)

Participants also reported it was a worry of their friends and family.

Your friends learn about it with you ...they can spot a hypo possibly before mebut it can be scary for them (Type 1, Kay)

3.1.5 A focus on weight loss and diet

Whilst participants reported that exercise was recognised by them and healthcare professionals as beneficial in managing diabetes, they also noted that there seemed to be an emphasis on diet and weight loss in the advice and support activities available to them. The promotion of physical activity was limited to commentary about the benefits but little was discussed about how to engage successfully in sustained physical activity.

they [healthcare professionals] would have said you know you need to lose some weight, but they never, ever said to me do exercise or do you exercise or ... never once" [Type 2, George)

we always advocate exercise as part of the solutionwe usually say you need to lose weight, exercise and change your diet....I think may be the diet aspect is heard more...by some....when we are talking about weight loss...and I do probably link it into the weight loss side of things, just because otherwise I find, especially in the first consultation you just bombard them with too many facts and they just don't take anything in at all (Jill, HCP)

3.1.6 Living with and managing a chronic health condition

In coping with a diagnosis of diabetes our participants recognised it as a life-long chronic condition. Many described long-term approaches to coming to terms with the condition which meant that taking part in physical activity was, perhaps, more difficult initially. In addition, some of our participants described challenging and complex lives in which they were also caring for or looking after family members.

It is difficult, bearing in mind as I said to you that I have a wife who's partly incapacitated by multiple sclerosis and therefore I take on a number of other responsibilities (Type 2, Colin)

I did start to lose a lot of weight through exercise ...but then, I had to help my daughter with the children, so my normal (exercise) routines went out the window (Type 2, James)

It was also recognised in our interviews that those living with diabetes may also have other physical and mental health conditions to manage that are important to consider when supporting them in having a more active lifestyle

you can't say, oh it's (exercise) easy, and then people get deflated because...there has to be a whole behaviour change ...you have to be allowed to failotherwise patients don't tell you they stopped exercising because they feel ashamed...and you have to see the person behind the condition ...people living with diabetes have other complications like being overweight, heart problems and nerve problems ...lots of men living with diabetes cannot get erections ...you have to see the person behind a complex condition to really support (Tara, HCP)

3.2 Headline Learning: the drivers motivating people living with diabetes to become more physically active

3.2.1 Accepting diagnosis, taking control and becoming more active

Whilst our participants reported the negative emotions surrounding initial diagnosis of diabetes, they also discussed the diagnosis as a foundation for potentially taking control of their lifestyle by understanding and experiencing the positive effect of physical activity on their condition. People living with Type 2 diabetes and healthcare professionals supporting

them reported the possibility of ‘reversing’ their condition by managing their diet. Losing weight and becoming physically active.

I started walking, I got myself a Fitbit and I made sure I did 10,000 steps plus a day. Fantastic. And that’s when my ... that is when my glucose levels started to become manageable...[by me] (Type 2, George)

when I got it [the diagnosis], I thought it was just the end. I’ve had so much support from the teams and the NHS and everything, and it’s actually made a massive impact on my life because I’ve started to get back into cycling, which is a sport I gave up when I was about I’d say twelve. I’ve actually become more sort of physically fit and it’s actually made me much more like motivated to keep on going (Type 1, Henry)

For some, becoming more knowledgeable about their condition, their lifestyle and the effect of physical activity and diet was a central learning aspect connected to the diagnosis. Diagnosis of diabetes presented a teachable moment for them to manage their own condition through engaging in physical activity.

with the exercise if my blood sugar is high, because it has been high, especially over winter when it’s Christmas and everything, I exercise and it actually brings it down....so you know it can ...it’s what you can control ...I think it’s important for people to understand is ...it’s a two compartment problem ...your diet and your exercise (Type 2, Jack)

3.2.2 Tailored physical activity opportunities

Our study emphasised that there is no one-size-fits all approach to the prescription and promotion of physical activity for those living with diabetes. Healthcare professionals reinforced the views of our participants that programmes and activities need to be designed and delivered with the needs and desires of those seeking to take part. Such provision needed to reflect the nature of the condition of diabetes and associated health problems.

You have to see the whole person living with a chronic condition like diabetes....they are likely to be more depressedhave other conditions... you wouldn’t say to someone with terrible hip pain and arthritis you are going to have to start jogging (Tara, HCP)

Tailored provision of physical activity also needed to recognise the capabilities of those living with diabetes and their experiences of being and becoming physically active.

We had a group ...and there was all sorts of activities .. dancing is in there ...different kinds of workouts ...we did walking ..something for everyone (Type 2, Maggie)

The walk schemes I do...are graduated in terms of difficulty ... I participate in some of the most challenging ones ..but you can choose ...you can walk one dayor you can walk six days a week (Type 2, Jim)

In addition, it was recognised that wider social determinants and socio-cultural issues needed to be taken into account. The significance of culturally specific advice and opportunities was identified by those living with diabetes and healthcare professionals

....and you wouldn't suggest going to a usual swimming session for Muslim women (Tara, HCP)

To be more active...make things more accessible. There is a community groupbut you have to not be at work to go ... [people living with diabetes] get discouraged [with no support]. Part of it is the language, because it's run in English and Hindi....we've got quite a lot of Iraqis and Persian and Farsi speakers and I think there's a lot of cultural stuff that needs attention most of the diet stuff advice that I give out is probably more related to your Western diets (Jill, HCP)

There was a support group for people from background of Asian, black, African and Caribbean ethnicity and ...it was great...but it was short and it finished (Type 2, Maggie)

3.3.3 Supported physical activity opportunities

Some participants in the study had been able to take control and manage their daily physical activity and preferred to engage in physical activity in a more individualised way. However, best practice in delivery of physical activity for those living with diabetes included aspects of support from both professional healthcare practitioners but also those delivering and taking part physical activity sessions.

The instructors always supported ...you know helping people with activities ...[even if] you can't do it. I always look forward to group [exercise] with people....we are all for the same cause, and it actually helped me you know when you want to do things by yourself, you may think OK, I don't have any time now. Working with a group, you will be thinking, OK, you have to go now, you know.... that consciousness is there for you to want to continue because for your health and meeting up with other peoplewhen it's just you and it's no fun, it's not motivating (Type 2, Maggie)

Support from the hospital is [brilliant]...then I started cycling, and I realised I just loved it all and then I came across like all these diabetic groups on Twitter and on-line and everything, and I started becoming more interested with it [exercise] (Type 1, Henry)

there's a friendship. And that can help to sustain you in your walking efforts...there is that kind of support. And also the voluntary leaders, everyone involved in this is a volunteer, and they all have an interesting story or interesting life and ... by walking with a group, one tends to do more challenging walks, instead of taking the short route because it's easier, you follow the leader (Type 2, Jim)

Technological developments in the monitoring of blood glucose were reported as central to the management of diabetes and a more positive experience of living with diabetes by those with the Type 1 condition.

I got it when I was eight... back then it was old school, full-on needles, injections... it was testing minimum sort of six to eight times a day, and then through the night as well on occasion... now we've moved on in the technological world so I now have a pump... I can set temporary basal [insulin] rates that's a reduction of my normal one to then be able to exercise so I don't hypo ...it helps monitor...it's

better...although you still have to check...sometimes my levels aren't right ...to exercise ...high intensity can be quite severe (Type 1, Kay)

Furthermore, ongoing monitoring by healthcare professionals and technological developments in exercise monitoring devices such as pedometers, phone apps and Fitbits was important to some participants as they became more physically active and developed a more habitual physically active life.

I have a pedometer and I try and get out at least three times a week in order to you know raise the level of my physical activity again....last summer I was almost stationary and this has helped me kickstart being active again...and I am monitored [by HCPs] ...they ring up every six to eight weeks (Type 2, Colin)

I have a Fitbit I've been using for some time....my son got it for me...so we can compare our activity ...and it does motivate me (Type 2, Jim)

3.3 Headline Learning: the resources and tools to help people living with diabetes to overcome the barriers to a physically active life

3.3.1 Mechanisms for information, knowledge exchange and support for physical activity

Participants living with diabetes in this study knew little about the condition prior to being diagnosed and all reported that being able to access sources of information was beneficial to them. The GP was their first point of knowledge exchange about their condition and whilst feelings of shock were common when initially diagnosed, the GP was central to developing their understanding. GPs and practice nurses we interviewed described well-established systems of diabetes care in which having conversations about healthier lifestyles were a central focus.

based on my experience, ensuring the benefits [of exercise] properly communicated to patients [is important]. Explainingthe real impact and improvement that exercise could have, not just for diabetes but for their broader health. I think I've had patients who are actually quite surprised about that and that acts as a form of motivation." (Lucy, HCP)

Understandably healthcare professionals have to prioritise aspects of diabetes care over and above physical activity. The pressure of time involved in consultation with patients and a lack of specialism in the prescription and promotion of physical activity was recognised as a challenge to developing meaningful conversations and support for a more active lifestyle.

Some professionals say, that's [physical activity promotion] not my job. I feel if you had a profession that knew that patient, had guidance... they can say, right, well we can do chair exercises, we can do arm exercises, we can do something else, and then give them a plan (Vicky, HCP)

sometimes I just don't feel there's enough time to go into the depth of everything for the patients (Vicky, HCP)

Some healthcare professionals emphasised that more could be done by them to ensure early intervention of physical activity for managing diabetes and suggested it should be discussed and prioritised as a primary form of diabetes management.

if people are caught early enough or haven't had so many complications from their diabetes, it might be, may be very, very beneficial in the long run (Vicky, HCP)

I know particularly in busy clinics it's often something that's possibly skimmed across, and I think it [physical activity] could be something certainly viewed as the actual first intervention..[rather] than perhaps just reaching for medications immediately, which I know can happen (Lucy, HCP)

Developing and communicating the wider connections between GP practices and physical activity services in the community were highlighted as an area that could improve in order to support people living with diabetes to become active if those services were appropriate.

the difficulty is that patients come from a large number of CCGs... and I'm not fully aware of all the resources that are available (Lucy, HCP)

the majority of patients see the importance of it [physical activity] there's a lot of practicality in actually building it into their lifestyle, so that's the main challenge..knowing how to do ...and where it's happening (Tara, HCP)

3.3.2 Understanding and preparing for hypoglycaemia

Physical activity affected participants in this study differently depending on the Type and intensity of exercise they engaged in. Participants reporting experiences of becoming hypoglycaemic while exercising explained that they had to develop an understanding of their condition and the effect of physical activity, and account for the possibility of becoming hypoglycaemic

I was cycling...and I knew I was having a hypo and ... they've got a village shop there, so now I always, whenever I exercise, I always, always carry money with me in case I have a hypo, I need to get a taxi or I need to get food or something (Type 1, Henry)

Those who were at a point where they could self-manage their own condition noted they had learned to do so with expert support and this contributed to a more sustained engagement in physical activity.

[when I was younger] I'd dance for so long and then have the biggest hypo in the world, but it never stopped me, so I just used to eat and carry on.....whenever I started doing physical activity I would always hypo. I used to sit in class and munch Mars Bars because that's what they told you to eat back then or drink Lucozade. I now know my own body. I can tell it's coming, so I can be doing it [exercise]

... and you just lose concentration, you'll be sweating more than the average person, a bit disorientated and you just go, oh I don't feel right, and you've got to test, and either eat and continue or you can't (Type 1, Kay)

Learning to recognise the signs of hypoglycaemia while exercising and being diligent about testing blood sugar levels before, during and after exercise allowed participants to personalise their physical activity plans. Such an approach provided a more enjoyable experience of physical activity and one which participants suggested they were more likely to engage in for the long-term. However, such positive reports of self-management of diabetes and exercise were not automatic or immediate. Rather, they involved a long-term approach to learning and understanding the effect of diabetes and exercise on the body. It also involved coping with the potential stigma of a long-term condition and overcoming perceptions that diabetes itself was a barrier to taking part in physical activity.

OK, so some of them are on insulin, and that would be a bit of a barrier because they're worried about hypos, They want it to work for them first time, and when it doesn't, they kind of give up and they say, actually I went out to play badminton or join a gym or whatever, I had three hypos, I was up all night with another hypo, I'm not doing that again. They don't want to check their blood glucose in front of their friends a lot of the time... But they do kind of really feel diabetes is an extra burden to being active (Bill, HCP)

3.3.3 Access to technological advances to support a physically active life

Participants living with Type 1 diabetes and healthcare professionals supporting them introduced some of the advances in diabetes technology that had generally made management of the condition easier. Some noted the use of continuous glucose monitoring systems worn as a sensor on the arm and insulin pumps, and also smart phone diabetes apps. Whilst a full account of developments in diabetes technology is beyond the scope of this project, it does appear that such technological advances were central to a more positive experience of being physically active whilst living with Type 1 diabetes.

the pump was a big game changer because obviously you've got no ... it's only quick acting insulin, so if you want to exercise ... it lags an hour, so if I wanted to go out at lunchtime at twelve, I'd have to set it at eleven to reduce my background insulin so I didn't go hypo if I wanted to go for a walk or ... if I was going to work out, obviously I'd knock it back a bit more. But that gives you such flexibility, because on the quick, the fast and slow acting insulin, it like takes three days for slow acting change to come into effect. Absolutely, the pump was ... obviously like I got into the fitness as I lost the weight, but yeah, the pump makes it so much easier. You know it's not perfect, don't get me wrong [I still live with diabetes] but it's a lot easier if you're active (Type 1, Gail)

I went to a study day, for practices nurse meeting once a month, and there was somebody doing a study [1 year] where diabetic patients can sign up, they get a app and they get a scale and they get advice and they get texts every day advising them to do a fifteen minute walk and stuff like that, active encouragement, and they can phone people and discuss their food ... they can phone and they

can discuss diet, food and exercise and health concerns, which I was very happy to hear about that (Debbie, HCP)

For those living with Type 2 diabetes technological developments were highlighted as giving access to immediate information about diabetes and exercise on-line (sometimes through the Diabetes UK website) enabling access to exercise groups they could join, and online monitoring and support groups for sustaining their physical activity endeavours.

the step counters on phones are a great motivational tool (May, HCP)

the support group has stopped but we support ourselves ...through WhatsApp ...to help and support each other (Type 2, Maggie)

3.4 Headline Learning: what can Diabetes UK do to help people living with diabetes to be more physically active?

3.4.1 Working with GPs more effectively

People living with diabetes and healthcare professionals in this study described established systems of care for those living with diabetes. Such care pathways involved a range of professional experts including, specialist endocrinologists, GPs, practice nurses, dieticians, and podiatrists. All participants were aware of the work of Diabetes UK to varying degrees but reported the potential for more effective lines of communication, information and service provision in the area of physical activity, particularly with GP practices.

They [Diabetes UK] are obviously a respected source ...but I haven't [consulted their information]. It would be great to have information sheetsbriefsthings we can go to quickly....targeted information [on physical activity]...that is relevant for the person sitting in front of you (Tara, HCP)

More information on community physical activity ...groups we could go toafter the ones we are given by GPs (Type 2, Maggie)

Diabetes UK could provide more information particularly at staff (professional practice) meetings on the facilities available locally (Nicola, HCP)

Well I think it would be very sensible if Diabetes UK was to talk a little bit more often to our hard-working GPs that are rather over-worked and emphasise to them the need....to ensure people have the full panoply of checks done each year... And in doing that annual check, the GP should ensure that they discuss physical activity with their patients. No [I did not have conversations about physical activity] (Type 2, Colin)

3.4.2 Promoting community and group support

Participants commonly discussed the benefits of community support for becoming and being active and highlighted that group physical activity sessions of a variety of kinds provided a source of motivation to be physically active. Such support networks enabled people living with diabetes to get started and stay engaged in physical activity and provided an opportunity to socialise with other people, exchange information about diabetes and take part in something enjoyable. Our findings emphasised a need for Diabetes UK to maintain and develop systems of advertising and communication about community physical activity services.

It would help us ...if they [Diabetes UK] had a flyer in the surgery or community ...I don't see this information...and it could be on public transport...all sorts of places...on the internet...it would be helpful (Type 2, Maggie)

I think people just need to be more aware of Diabetes UK. I think you're only ... the only reason that I found out about it was by going on my twelve-week course and looking on Facebook. I don't really see it [community physical activity provision] advertised anywhere else. At my local ... health centre there's nothing ... we don't have anything that says about Diabetes UK [and physical activity] (Type 2, Don)

We do ...talk about the one community exercise groupbut it's not that accessible ...you have to not be at work...more information about community groups [for physical activity] would be good (JC, LM HCP)

3.4.3 Personalised physical activity

Alongside the benefits and preferences for group and community based physical activity provision participants in the study discussed the need for personalised and tailored physical activity that accounted for their physical capacities and requirements. Those who were inactive identified the need for low intensity types of exercise like walking or chair-based activities. Those who were more active explained that they had progressed to more moderate levels of activity from a light exercise base. People living with diabetes need information and support which allows them to start to be active, taking part in activities they enjoy, and then to develop their capacity for more frequent and potentially more intense levels of physical activity.

GPs do not have the time and resources to help patients living with diabetes get more active....exercise on referral is available but ... not very useful...as it's not personalised. Physical activity is of great therapeutic benefit with people living with diabetes but it is hard to get the message across when everybody is looking for instant gratification and exercise needs to be persistent to get benefits. Also people living with Type 1 diabetes need specialist advice before undertaking physical activities ..some sort of targeted....personalised approachis needed to

ensure thatpeople do not give upthey should also enlist help from friends and family so that they can exercise and manage their diabetes (Jane, HCP)

I think more individualised support [for physical activity] would be helpful. I mean Ilike an example with the diet, I joined Weight Watchers and I'm not finding them terribly helpful, you know because they have little understanding of medication (Type 2, Amy)

Yes...it would help for exercise instructors to know more ...to be able to tailor a session ...to what we needor to bemore personal to how we ...have to manage....in an exercise class (Type 1, Kay)

3.4.4 Raising awareness and understanding of diabetes and physical activity

Our conversations with participants about physical activity and diabetes raised the importance of specific and accurate messaging in the prescription of exercise but also the need to raise awareness and understanding of the physical and psychological challenges of living with a chronic long-term condition. Raising awareness and understanding of diabetes with those living with the conditions but also family, friends and community physical activity specialists was considered to be central to supporting people who were diagnosed to realise physical activity as important in the management of diabetes and to take part in a regular and sustained way.

I do feel more money, or more effort should be put into living with the psychological impact of a long-term condition...like diabetes ... I think the psychological impact of diabetes is very much understated, I think many people find the prospect, even of Type 2, of living on a diet for the rest of their lives....[and being very active]....just very, very difficult to adjust to (Type 1, Jim)

Diabetes UK give the impression that [diabetes] it's a minor inconvenience, it's not a problem. So we get to the ridiculous situation where only ..a small amount... of the UK population think diabetes is a serious condition which is really, really sad....it needs to be promoted as a serious health condition (Type 1, Rebecca)

It is a chronic health conditionand it has serious health consequences ...and different types which are complicatedyou can get gestational diabetes ...problems for mother and babyand with managing it ...you have to have the motivational conversation that is about saying you are in this place but you don't have to go down the hill but to go up the hill is going to require a big change ...and saying you are allowed to fail and we can have this conversation again ...because otherwise patients stop [the healthy lifestyle changes] (Tara, HCP)

3.4.5 Improving information about Type 1 diabetes and physical activity

Those living with Type 1 diabetes and healthcare professionals working with them in this study were cognisant of the benefits of taking part in physical activity for controlling blood sugar levels through improved insulin sensitivity and for avoiding long-term health

complications of the condition associated with the heart, eyes, kidneys and nerves. However, it was explained that there were specific and sometimes complex aspects of Type 1 diabetes management that needed to be communicated and learned. This was an aspect of diabetes care that our participants considered to be specialised and tended to be developed through specialist care pathways but nonetheless, the information about exercising with Type 1 diabetes and specialist education courses could be improved in Diabetes UK communication channels.

Exercising with Type 1 diabetes is much more specialist...and our Type 1s are already under special care So that information is quite specificthere could be better information about this..I guess I don't have much to do with this group...beyond diagnosis (Jill, HCP)

The DAFNE course was a game changer for meI have a friend who is a diabetes nurse too...and she is totally on it with latest information ...it's all carb counting and insulin management ... but that level of knowledge ...it makes exercising possible...people should know it (Type 1, Gail)

you do need to be fully instructed in relation to how you deal with physical activity [with Type 1]. It's a very important aspect of diabetes care and I think it needs to be understood precisely how you use physical activity in order to maintain your bodily function, but also to be fully aware of your diabetes condition. (Type 1, Jim)

3.5 Headline Learning: how can others (including healthcare professionals) support people living with diabetes to move more?

A network of support mechanisms was identified by participants in this project as appropriate and effective in encouraging people living with diabetes to move more. This included professional healthcare practitioners operating through GP and specialist hospital services for diabetes care, community groups resourced by Diabetes UK, local and online organisations promoting physical activity for those living with diabetes and more informal support through social media groups and family and friend networks. Five interconnected issues were identified in our findings which illustrate how others can support people living with diabetes to become more active and these overlap with the headline learning detailed in the report so far.

3.5.1 Concise and accessible information

Reflecting conversations about promoting community and personalised approaches to physical activity and raising awareness about living with diabetes, participants identified the need for concise and accessible information as one aspect of best practice in supporting them to move more.

I am always seeking to support clients...to be...physically active...but I'd like to see like to see more resources in place...accurate ones.... Diabetes UK should be doing thisand lobbying and/or providing more services. (Jane, HCP)

3.5.2 Continuity in care

Healthcare professionals working with those living with diabetes tended to work with an identified care pathway in supporting the management of the condition. Such pathways were noted as effective mechanism of management continuity in diabetes care because expert staff were centrally involved. It was highlighted that a distinct pathway for prescribing and promoting physical activity for those living with diabetes appeared to be a gap in diabetes care. In addition, participants informed us that continuity of care was important to their experience in understanding and managing their condition but also to learning the importance of engaging in regular physical activity. Relationship continuity in which patients have a continuous therapeutic relationship with relevant clinical experts was highlighted as significant in this regard.

Unfortunately she wasn't my diabetic nurse for much longer, because I think I probably had five, maybe six diabetic nurses and they never really stuck around. Absolutely no continuity. Never spoke to my doctor, only ever to a nurse, and ... I think it took it for me to go to one doctor and say that I'm, you know, I'm in a bad wayI just felt like I'd kind of slipped through a gap and wasn't really being taken care of (Type 2, Jack)

The incredible thing about being a GP is that you see people with a condition ...like diabetes..for an extended period of time ...and you see people at different stages...and all across ...different types of peopleand that's when you can have the conversation ...more than once ...and encourage people...it's not easy....there are big [lifestyle] changes ...with diabetes and you have to see the whole person (Tara, HCP)

[it was]... a much more sympathetic, expert and helpful primary care nurse that started me on becoming more active...and then I am aware of Diabetes UK....and now I am going to do the Diabetes UK 10,000 step challenge later in the summer. (Type 2, Farha)

3.5.3 Holistic guidance

Our findings revealed that best practice in the prescription and promotion of physical activity for those living with diabetes should be focused on holistic approaches to care and management of the condition. Holistic approaches were explained as those which understand the 'whole' person; biologically, psychologically and socially from diagnosis to medical and other interventions. Such approaches could benefit from improved partnership working in diabetes care and particularly to develop existing care pathways to more directly include physical activity.

I think one of the reasons that diabetes is such a big drain on resources today, and so much money is spent on complications, is that people are not given the instruction required to be able to deal with diabetes in the broadest context. That's the social context...and the psychologicalphysical activity ..has to be in that context...it's underestimated [the challenges of living with diabetes] (Type 1, Jim)

We do have multidisciplinary teams to plan patient careyou need to consider many factors...but there is a ack of focus on the benefits of physical activity ... and also ...lack of awareness of community based facilities amongst hospital staff (Nicola, HCP)

Can you imagine the responsibilityof managing insulinthen there are often other issues ...health complications ...cultural factorsthe person may have difficulties elsewhere (Tara, HCP)

I'm really, really glad that they did insist on....seeing a psychologist ... and you know for my husband and myself and my son, every single time we see a psychologist separately to discuss maybe what we're concerned about, and then we see them as a family as well to get us all working together as a unit, supporting each other... it's been fantastic (Dervla, HCP)

3.5.4 Tailored and targeted physical activity provision

Our discussions with participants about promoting community physical activity services, developing systems of support through a physical activity pathway for diabetes, those living with diabetes and an emphasis on holistic, person-centred strategies for encouraging people to move more identified a need to tailor the physical activity programmes to the needs and desires of targeted groups living with different types of diabetes. Targeting and tailoring physical activity provision included suggestions for low cost and accessible services, recognition of multiple barriers to taking part in physical activity including those specifically associated with diabetes and offering a range of appropriate designed and implemented physical activity sessions.

A free class or a subsidised class, because often cost can be an issue....in the evenings there's childcare's a barrier... it's targeting those barriers,,,to physical activity...as well as the diabetes issues (Lucy, HCP)

So it might be nice to have more of a taster session... they go to one and decide, actually it's not [or is] for me... actually if it was just for people with Type 2 diabetes, they would know that actually they're not alone (Bill, HCP)

Certainly addressing the culturally sensitive issuesaround physical activity ...(Jill, HCP)

3.5.5 Training for physical activity specialists

One of the key areas for consideration in developing appropriately designed and implemented physical activity provision for those living with diabetes is education for

physical activity specialists including exercise instructors and community sport coaches. Training for such specialists is needed to develop their knowledge about diabetes and the role of physical activity in managing the condition. Including physical activity specialists in the diabetes care pathway may also support more effective referral to community physical activity opportunities.

We sometimes have in surgery ...patient participation groupsspecialist diabetic nurses come in...we all need to keep updated....[this could be a place] to include exercise talks (Tara, HCP)

We're at [name] hospital where they are absolutely fantastic and have encouraged [child] to carry on exercisingit's all about expert knowledge.....some parents stop their children exercising with diabetes because it might be easier to control the glucose ..but with exercise your outcomes are better long-term ...school teachers and in PE don't know enough (Dervla, HCP)

They [exercise instructors] could do with a better understanding of the condition ...it might encourage more people [with diabetes] to take part (Type1, Kay)

Section 4: Conclusions and Recommendations

Taking part in regular physical activity can help people living with diabetes to manage their condition as well as reduce the risk of Type 2 diabetes in the population more broadly. The findings of this study identify that people living with diabetes can find it challenging to become more physically active. In this study, barriers to physical activity included the negative impact of diagnosis, lack of knowledge about physical activity, limited opportunities for physical activity, fear of hypoglycaemia and a focus on weight loss and diet in the management of the diabetes. Participants in the study did recognise the benefits of physical activity and wished to be more physically active. Accepting their diagnosis and taking control of managing the condition, alongside the provision of tailored and supported physical activity were identified as significant in motivating people living with diabetes to move more. Resources and tools for helping people living with diabetes become more active included the development of mechanisms for knowledge exchange about physical activity benefits and services, preparing for hypoglycaemia and access to technological advances for diabetes management and care. In addition, our findings illustrate the importance of developing and maintaining effective communication between medical and community services to support those living with diabetes to lead active lifestyles and ensuring access to accurate information about, and high-quality tailored physical activity services

We present five recommendations that can inform policy and practice in the area of physical activity prescription and promotion for diabetes management and prevention.

Partnership working between community physical activity and medical services and those living with diabetes

There is scope to develop partnerships between medical services for diabetes management and care in GP practices and hospital settings and community organisations delivering physical activity. There is a role for community sport and physical activity organisations in supporting the strategies of clinical commissioning groups by being involved in decision making about physical activity programmes for those living with diabetes.

Physical activity pathways embedded into existing diabetes management strategies

Diabetes management is framed by established care pathways including a range of medical and healthcare professionals. Existing diabetes care pathways could be employed as a mechanism for ensuring exchange of information about physical activity and could provide a pathway for those living with diabetes to engage in community services.

Tailored and targeted physical activity provision

Taking part in regular and sustained physical activity is more likely if provision is tailored to the needs and wants of targeted groups of people living with different types of diabetes. Physical activity specialists have a role to play in designing and implementing physical activity that meets the needs of those living with diabetes. Best practice in designing and delivering physical activity should involve codesign approaches that involve all relevant stakeholders in the diabetes care pathway including those living with diabetes themselves.

Accurate messaging about physical activity and diabetes

Healthcare professionals and physical activity specialists have a role to play in ensuring that accurate messages about diabetes and physical activity are available to those living with the condition. There is scope to develop concise, accurate and accessible information that recognises difference and diversity in types of diabetes and is socio-culturally sensitive in the prescription and promotion of physical activity.

Training about diabetes and the role of physical activity for physical activity specialists

Physical activity provision takes place in established and regulated community settings and is delivered by highly skilled, knowledgeable and qualified experts. There is potential for physical activity specialists including community sports coaches, walk leaders, dance and exercise instructors to target, recruit and support people living with diabetes to be physically active if they are trained to understand diabetes and the role of physical activity. Physical activity specialists can potentially provide a community ambassador role for raising physical activity levels amongst those living with diabetes.

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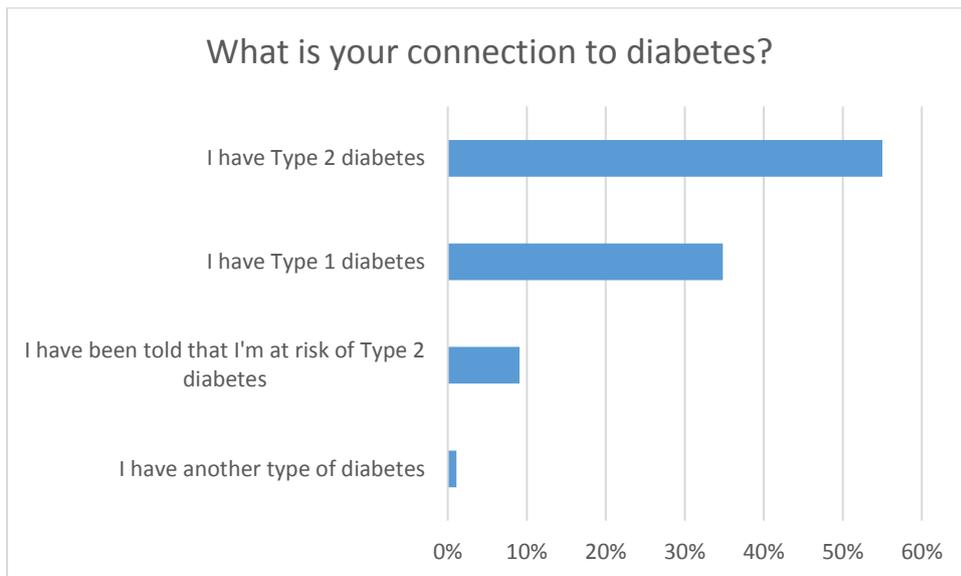
Appendix 4

[Online survey by people with diabetes \(PWD\)](#)

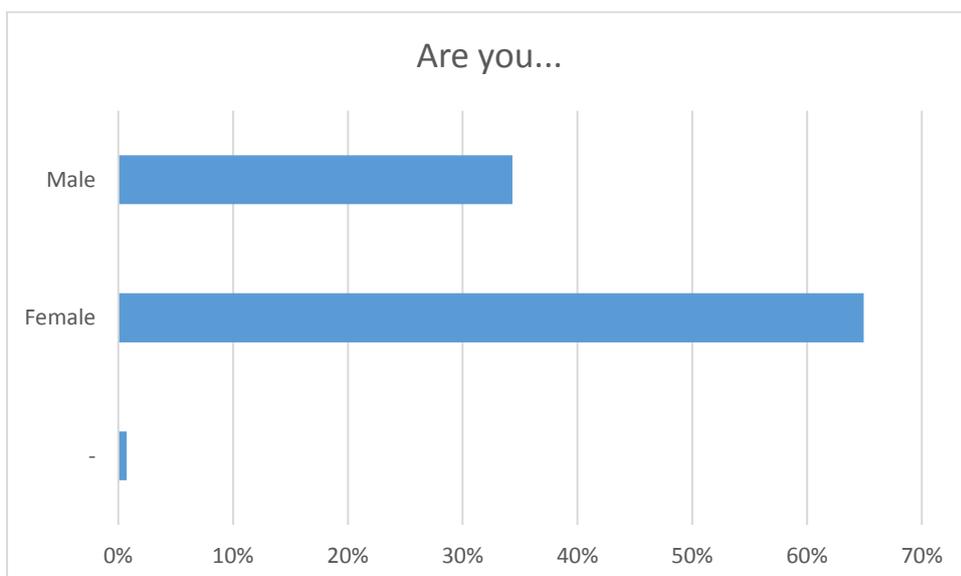
Total respondents: 934.

Quantitative Results

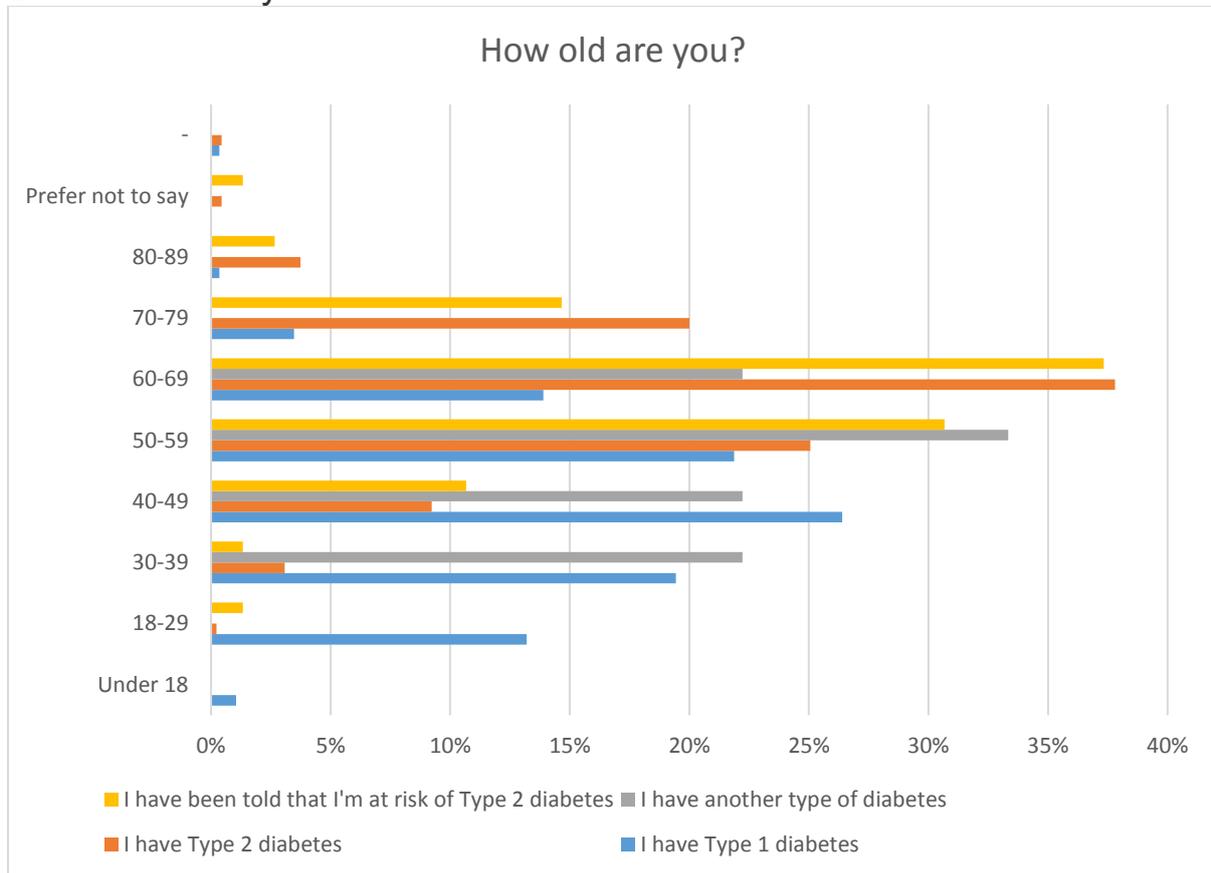
1. What is your connection to diabetes? Whilst we recognise people may have a number of connections to diabetes, please choose your main connection.



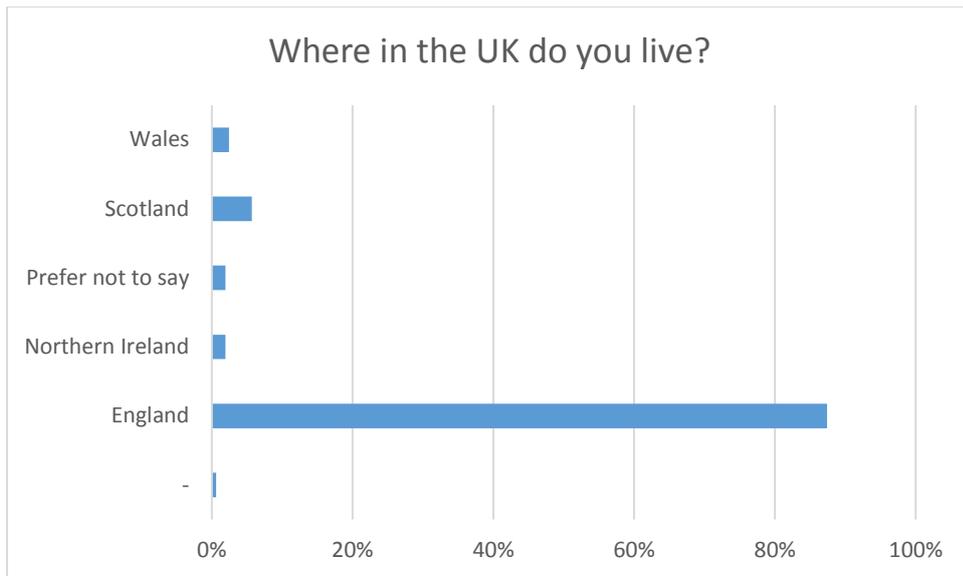
2. Are you...



3. How old are you?

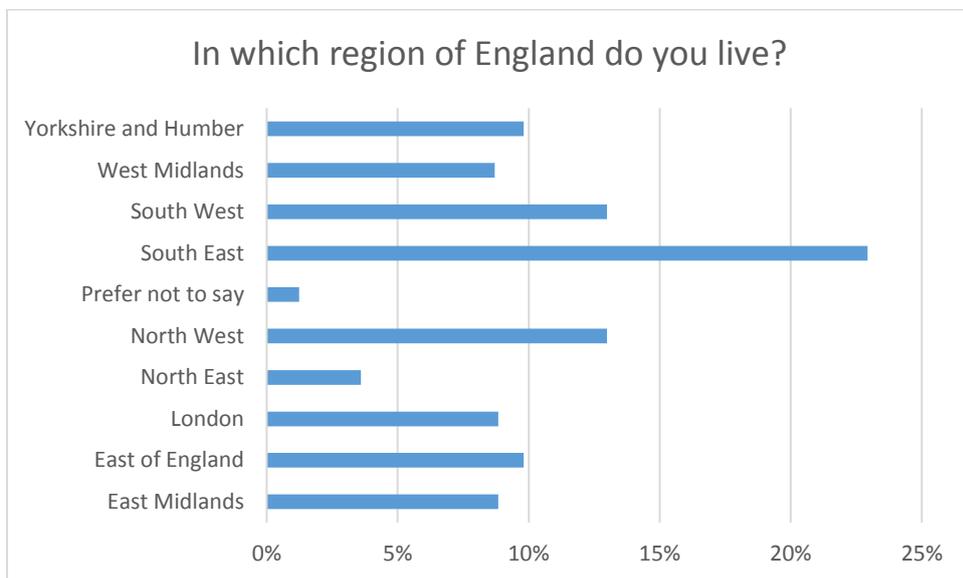


4. Where in the UK do you live?



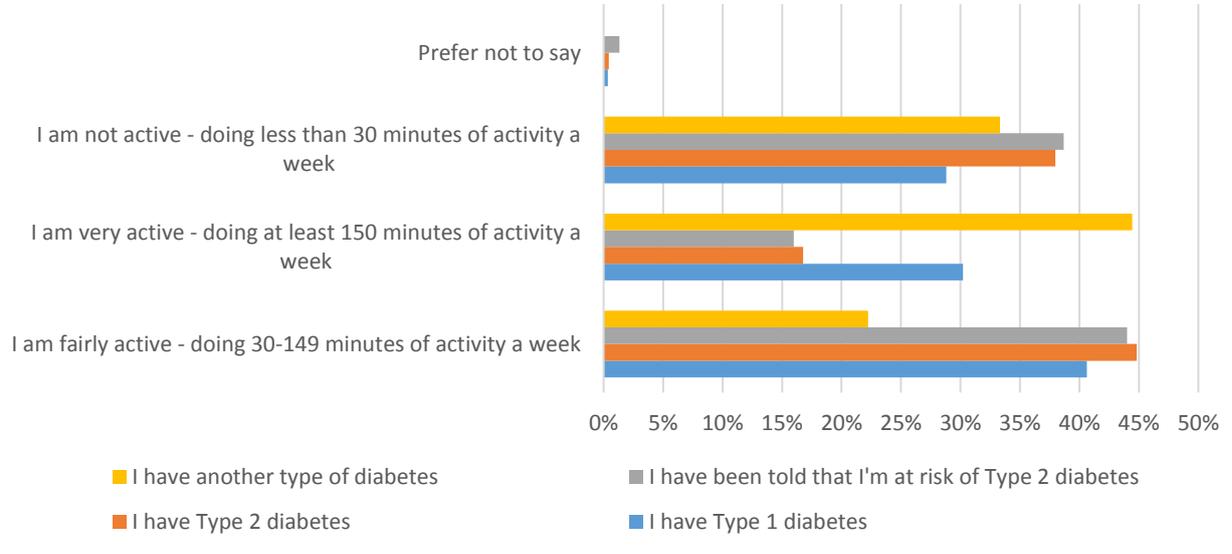
5. In which region of England do you live?

Of those that live in England

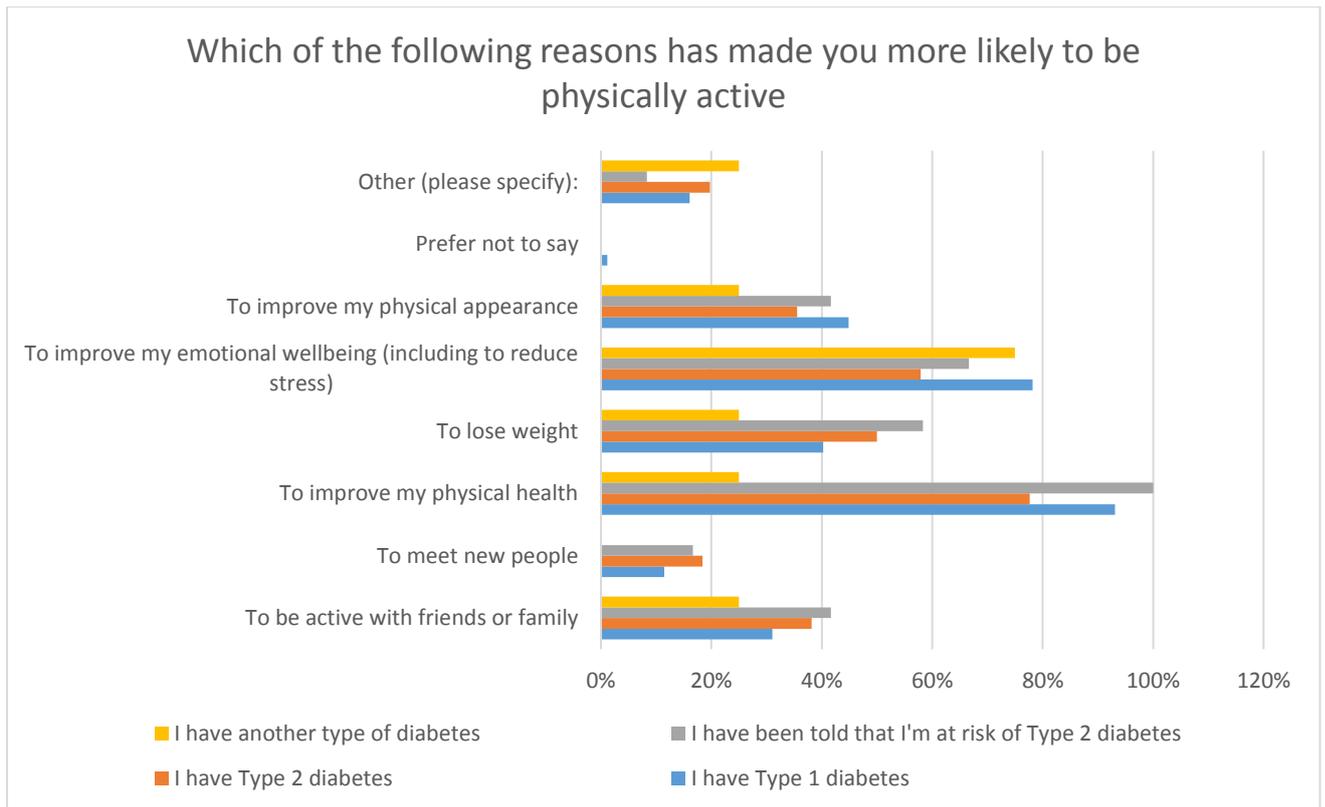


6. How would you describe your physical activity levels?

How would you describe your physical activity levels?



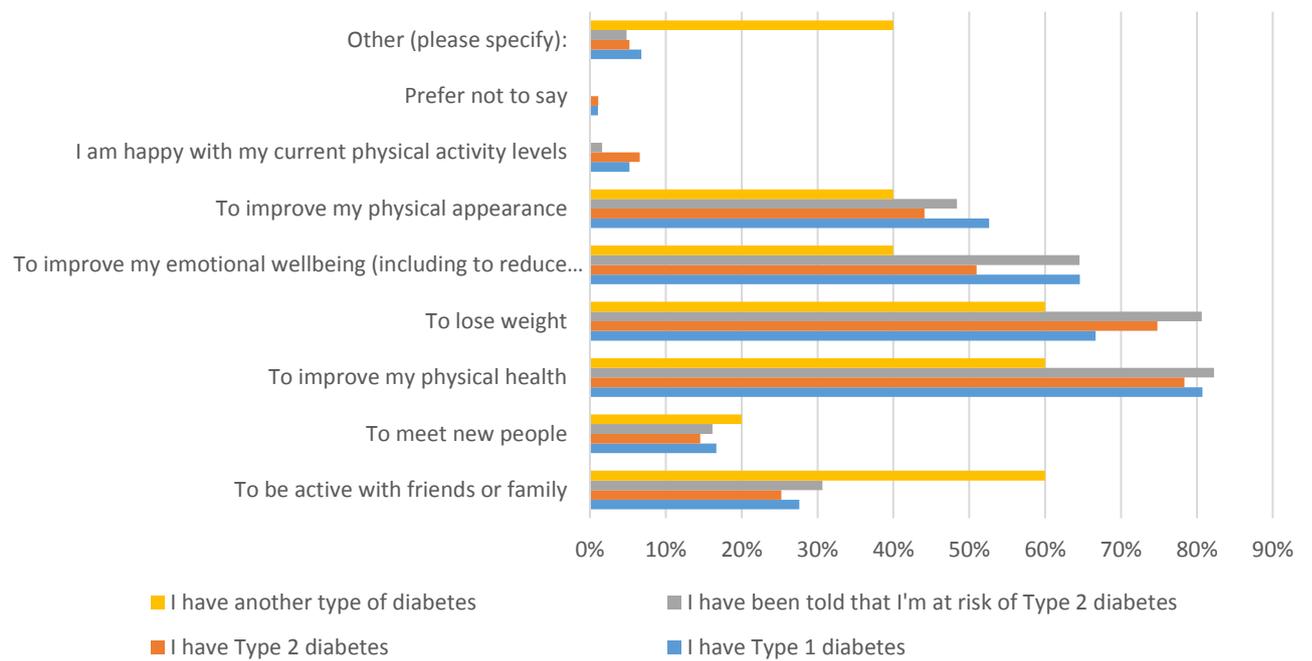
7. Which of the following reasons has made you more likely to be physically active? Please choose all that apply.
Of those that had indicated they were very active



8. Which of the following reasons would make you more likely to be physically active? Please choose all that apply.

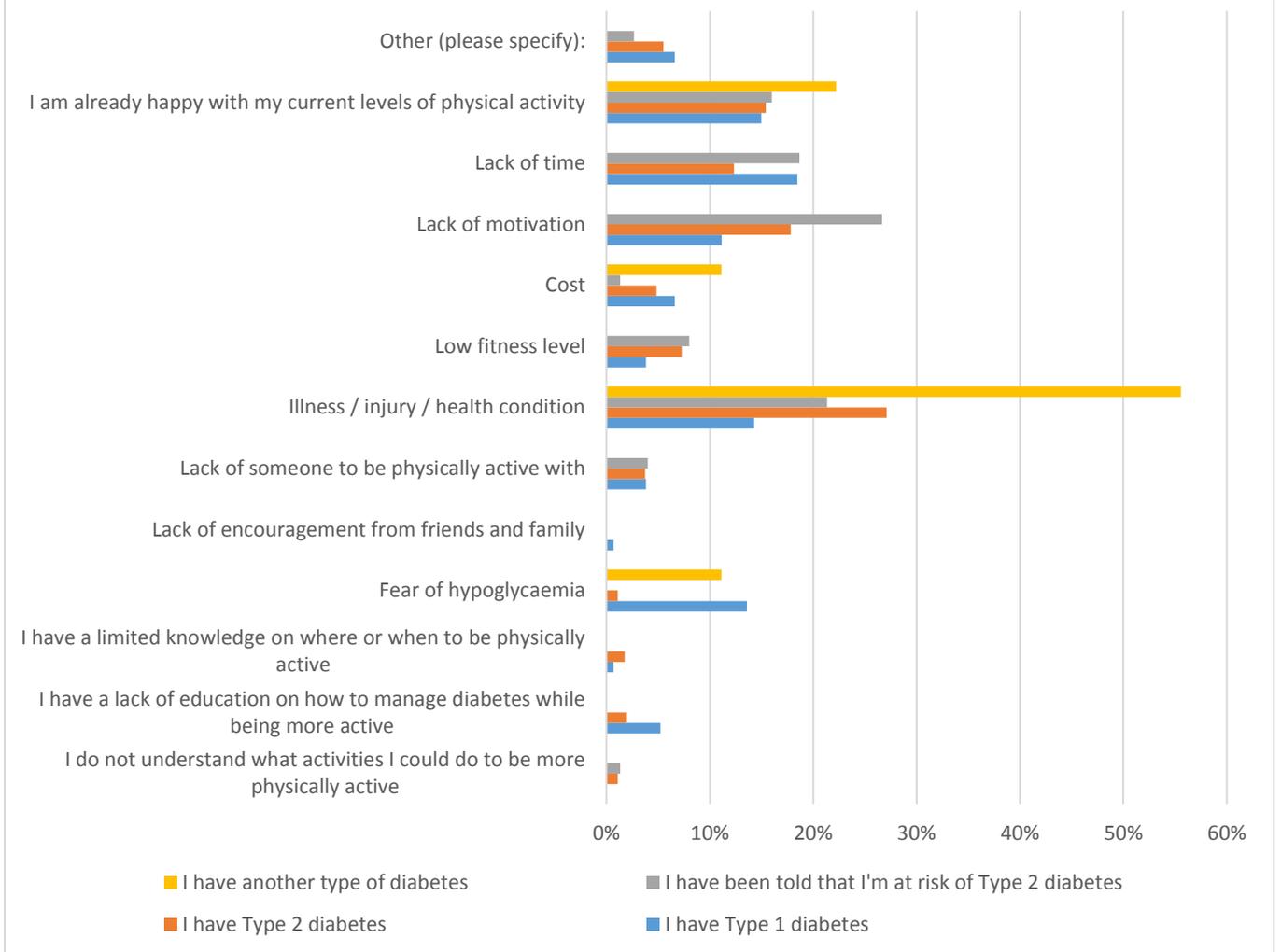
Of those that were fairly active, not active or preferred to not say

Which of the following reasons would make you more likely to be physically active



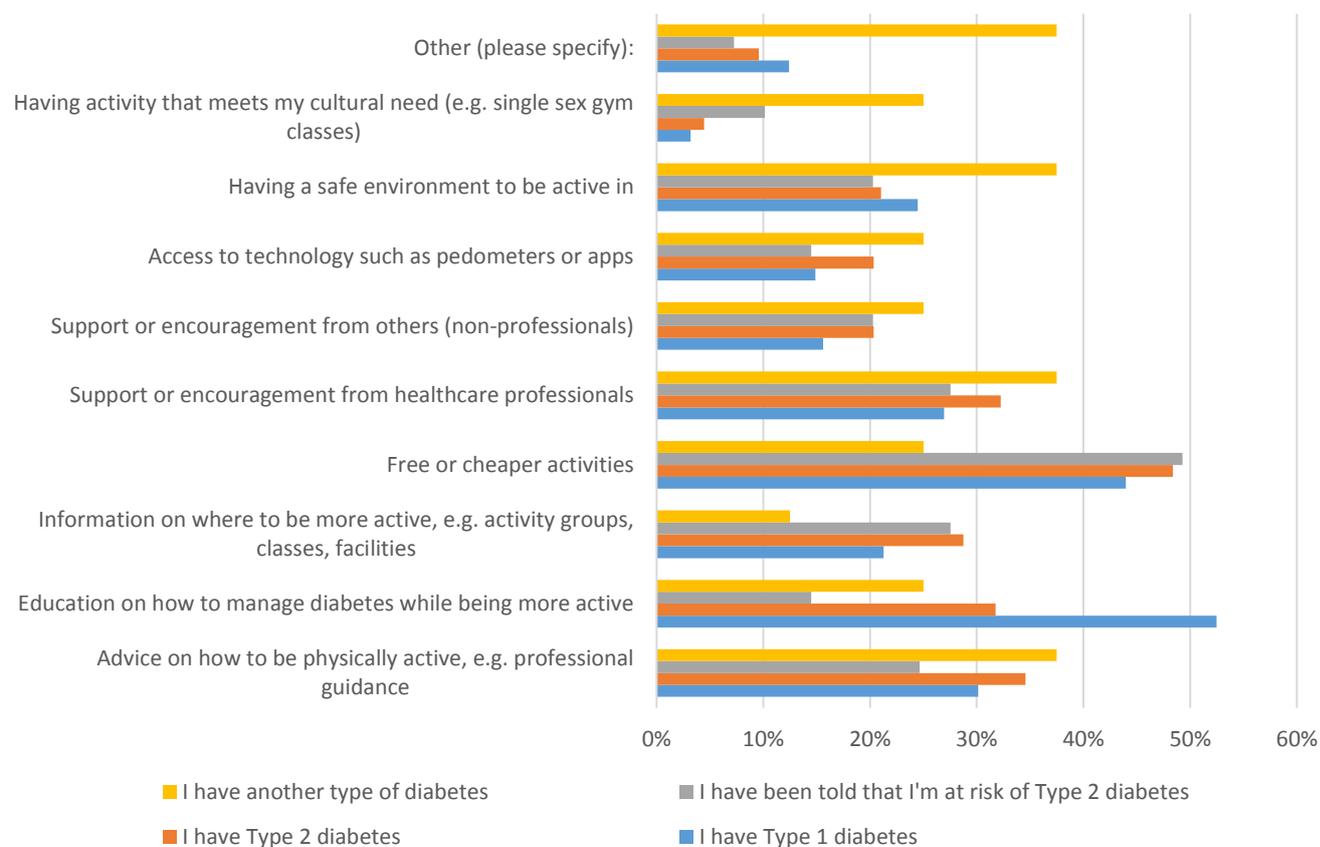
9. Which of the following is the main reason that has stopped you from becoming more physically active? Please choose the one main reason.

Which of the following is the main reason that has stopped you from becoming more physically active



10. Which of the following resources and tools would help you be more physically active? Please choose all that apply.

Which of the following resources and tools would help you be more physically active



11. What can Diabetes UK do to help you be more physically active?
Please do not leave personal details such as name, telephone number or email address in this box as you may become identifiable.

Open-ended question-see qualitative analysis.

[Online survey by Healthcare professionals \(HCP\) -](#)

Total respondents: 38.

Quantitative Results

2. Page 2

1. Which role best describes your occupation?							Response Percent	Response Total
1	GP						2.63%	1
2	Specialist Diabetes Doctor						5.26%	2
3	Practice Nurse						10.53%	4
4	Diabetes Specialist Nurse						63.16%	24
5	Psychological Therapist						0.00%	0
6	Podiatrist						2.63%	1
7	Dietitian						10.53%	4
8	Other Allied Health Professional						0.00%	0
9	Prefer not to say						0.00%	0
10	Other (please specify):						5.26%	2
Analysis	Mean:	4.39	Std. Deviation:	1.83	Satisfaction Rate:	37.72	answered	38
	Variance:	3.34	Std. Error:	0.3			skipped	0

3. Page 3

2. Where in the UK do you work?							Response Percent	Response Total
1	England						94.74%	36
2	Northern Ireland						0.00%	0
3	Scotland						0.00%	0
4	Wales						5.26%	2
5	Prefer not to say						0.00%	0
							answered	38

2. Where in the UK do you work?

						Response Percent	Response Total	
Analysis	Mean:	1.16	Std. Deviation:	0.67	Satisfaction Rate:	3.95	skipped	0
	Variance:	0.45	Std. Error:	0.11				

4. Page 4

3. In which region of England do you work?

						Response Percent	Response Total	
1	East of England					8.33%	3	
2	East Midlands					13.89%	5	
3	London					8.33%	3	
4	North East					5.56%	2	
5	North West					13.89%	5	
6	South East					22.22%	8	
7	South West					11.11%	4	
8	West Midlands					2.78%	1	
9	Yorkshire and Humber					13.89%	5	
10	Prefer not to say					0.00%	0	
Analysis	Mean:	5.11	Std. Deviation:	2.47	Satisfaction Rate:	45.68	answered	36
	Variance:	6.1	Std. Error:	0.41			skipped	2

5. Page 5

4. What do you think are the reasons people with diabetes, and those at risk of Type 2 diabetes, increase their levels of physical activity? Please choose all that apply.

						Response Percent	Response Total	
1	To be active with friends or family					40.54%	15	
2	To meet new people					16.22%	6	
3	To improve their physical health					86.49%	32	
4	To improve the emotional wellbeing (including to reduce stress)					62.16%	23	
5	To lose weight					91.89%	34	
6	To improve their physical appearance					48.65%	18	
7	Prefer not to say					0.00%	0	
8	Other (please specify):					10.81%	4	
Analysis	Mean:	14.19	Std. Deviation:	19.54	Satisfaction Rate:	151.74	answered	37
	Variance:	381.79	Std. Error:	3.21			skipped	1

6. Page 6

5. What do you think people with diabetes or those at risk of Type 2 diabetes need to increase their levels of physical activity? Please choose all that apply

						Response Percent	Response Total
1	Advice on how to be physically active, e.g. professional guidance					72.97%	27
2	Instruction on how to manage the risks of physical activity (e.g. falls prevention)					32.43%	12
3	Education on how to manage diabetes while being more active					70.27%	26

5. What do you think people with diabetes or those at risk of Type 2 diabetes need to increase their levels of physical activity? Please choose all that apply

		Response Percent	Response Total			
4	Information on where to be more active, e.g. activity groups, classes, facilities	78.38%	29			
5	Free or cheaper activities	75.68%	28			
6	Support or encouragement from healthcare professionals	78.38%	29			
7	Support or encouragement from others (non-professionals)	81.08%	30			
8	Access to technology such as pedometers or apps	43.24%	16			
9	Having activity that meets their cultural need (e.g. single sex gym classes)	51.35%	19			
10	Having a safe environment to be active in	56.76%	21			
11	Other (please specify):	8.11%	3			
Analysis	Mean:	35.43	Std. Deviation: 76.66	Satisfaction Rate: 289.46	answered	37
	Variance:	5876.19	Std. Error: 12.6		skipped	1

7. Page 7

6. What is stopping you from helping people with diabetes to be more physically active? Please choose all that apply

		Response Percent	Response Total
1	Time constraints	50.00%	17
2	Confidence in your own physical activity knowledge	14.71%	5
3	Inadequate training in delivering physical activity guidance	29.41%	10
4	Lack of standard protocols	32.35%	11

6. What is stopping you from helping people with diabetes to be more physically active? Please choose all that apply

		Response Percent	Response Total		
5	Lack of financial incentives	8.82%	3		
6	Your own interests and health behaviours	0.00%	0		
7	Difficulty converting physical activity advice into an easy to understand format	14.71%	5		
8	Feeling like it is not your job to do	0.00%	0		
9	Prefer not to say	0.00%	0		
10	Other (please specify):	38.24%	13		
Analysis	Mean: 8.26	Std. Deviation: 6.97	Satisfaction Rate: 70.92	answered	34
	Variance: 48.52	Std. Error: 1.19		skipped	4

8. Page 8

7. As a healthcare professional, what tools and resources do you feel you need in order to adequately support people to move more? Please choose all that apply

		Response Percent	Response Total
1	Advice on how to be physically active from other health care professionals	24.32%	9
2	Suggestions on how to manage the risks of physical activity (e.g. falls prevention)	21.62%	8
3	Education on how to manage diabetes while being more active	43.24%	16
4	Information on where patients can be more active, e.g. activity groups, classes, facilities	67.57%	25
5	More time with diabetes patients in consultations	54.05%	20

7. As a healthcare professional, what tools and resources do you feel you need in order to adequately support people to move more? Please choose all that apply

		Response Percent	Response Total
6	Access to a physical activity specialist	75.68%	28
7	Prefer not to say	0.00%	0
8	Other (please specify):	5.41%	2
Analysis	Mean:	12.35	Std. Deviation: 14.15
	Variance:	200.21	Std. Error: 2.33
		Satisfaction Rate: 134.75	
		answered	37
		skipped	1

9. Page 9

8. What can Diabetes UK do to help you support people living with and at risk of Type 2 diabetes to be more physically active? Please do not leave personal details such as name, telephone number or email address in this box as you may become identifiable.

		Response Percent	Response Total
1	Open-Ended Question	100.00%	24
		answered	24
		skipped	14

Open-ended question-see qualitative analysis.

Qualitative Results for people with diabetes (PWD) and Healthcare professionals (HCP)

Introduction

The following provides a summary of the key findings from analysis of free text comments left as part of two surveys looking at physical exercise and diabetes. One survey was completed by people living with diabetes or at risk of Type 2 diabetes as well as parents and carers. This survey ran between March and May 2019. The second survey was completed by health care professionals that support people living with diabetes and at risk of Type 2 diabetes. This survey ran between March and June 2019.

The comments were given in response to the question:

‘What can Diabetes UK do to help you to be more physically active? For people living with diabetes and at risk of Type 2 diabetes (447 comments)

What can Diabetes UK do to help people with diabetes be more physically active? For parents and carers of people living with diabetes (19 comments)*caution as small number

“What can Diabetes UK do to help you support people living with and at risk of Type 2 diabetes to be more physically active?” For health care professionals (24 comments) *caution as small number

Key Themes – People living with diabetes, people at risk of Type 2 diabetes and parents and carers

Diabetes UK to...

- **Provide advice on**
 - **General fitness and exercise**
 - **Managing diabetes when being physically active**
- **Provide information about what physical activity we could be doing and signpost us to where we can do it**
 - **Suggestions of physical activity**
 - **Support with adapted exercise, not just generic advice**
 - **Signpost us to where we can do physical activity in our local area**
- **Provide support and encouragement to increase people’s physical activity**
- **Support us to meet and exercise with other people that are in a similar situation to us**
- **Ensure that professionals have the appropriate knowledge of diabetes and exercise to provide safe and accurate support and advice**
 - **Healthcare professionals**
 - **Physical activity leaders**
- **Improve the accessibility of services and facilities to exercise and be physically active**
 - **Reducing the cost of being physically active**
 - **Improving the accessibility and availability of activities**

Provide advice

General fitness and exercise

Diabetes UK providing advice was a clear theme coming from the comments left. This was often, a general comment about the need for advice about fitness and exercise, with some highlighting the need for honest advice about potential complications and difficulties that may occur when exercising with diabetes.

Managing diabetes when being physically active

Although many comments left were requesting general advice, a lot of people indicated wanting advice on managing their diabetes whilst exercising. This included how to manage blood glucose levels, before, during and after different types of exercises and managing the fear of hypos and treating them effectively. One suggestion was having targeted education programmes specifically on diabetes control and exercise.

Providing advice on diet, including specifically in relation to exercise, was also mentioned on a number of occasions.

Providing advice on managing diabetes and exercise as well as diet and food, also came through from the comments left by parents and carers of people living with diabetes.

Provide information on what activity we can be doing and signpost us to where we can do it

Suggestions of physical activity

People reported wanting information and suggestions of different ideas (e.g. on the website) of what they could be doing to increase their physical activity level and more so, for some, the best and most beneficial physical activity they could be doing.

Some people were more specific in wanting ideas of exercise for certain ages, for their type of diabetes or very low physical activity levels.

This was echoed by parents and carers as they highlighted advice about different types of activity and what other people were doing to be physically active would be useful.

Support with adapted exercise, not just generic advice

For many, a barrier to not being more physically active, was other physical limitations, whilst others expressed they were unable to be physically active. It was clear, that general generic physical activity advice and suggestions wouldn't be appropriate or enough for many and advice on adapted exercise was welcomed. Providing advice on exercise that can be done within the home (including through an app) was suggested, as well as specific advice for people exercising with

diabetes complications or other co-morbidities and physical limitations in addition to diabetes. For example, sitting exercises.

Provide information on what activity we can be doing and signpost us to where we can do it

Signpost us to where we can do physical activity in our local area

In addition to knowing what sort of physical activity they could be doing, a frequently raised request was for Diabetes UK to provide signposting to physical activities and exercise that people can access in their local area, including those that are at a low cost.

Providing information of where activity can be done was also raised by parents and carers.

Provide support and encouragement to increase people's physical activity

Motivation was a frequently cited barrier for people not doing more physical exercise and activity, therefore, it was suggested that Diabetes UK have a role to play in providing support and encouragement to people to be more physically active. As suggested, this could be ensuring that information about the benefits of exercise is provided to people with diabetes.

Support and encouragement took on different forms for different people. For some, having support with goal setting (e.g. including exercise plans) and regular check-ins of progress was felt would be beneficial, with some suggesting this could be done through an app. A few people felt that access to a personal trainer would help them to start or continue exercising, whether online or in person.

Others suggested that Diabetes UK provide real life, motivational stories of people with diabetes being physically active. For some, this was showing people with diabetes at a professional level, to motivate and show what level of physical activity can be achieved. For others, this was showing those that have moved from very low level fitness and made progress to improve this.

Within the comments from parents and carers a role of support and motivation was also pointed out, including setting goals, as well as ensuring that when people receive a diagnosis of diabetes, they are encouraged that diabetes does not mean that they cannot exercise. It was also shared that starting people off being physically active at a young age would be of benefit.

Support us to meet and exercise with other people that are in a similar situation to us

A frequent theme from people with diabetes or at risk of Type 2 diabetes was enabling them to meet others that are in a similar situation to them. This included peer support, for example, through meeting and discussing their experiences (both on forums and in person), but for others this was meeting others and exercising together in a group format or a mixture of the two. Some suggested that these group exercise programmes were specific to diabetes generally or their type of diabetes, others mentioned groups of people of a similar fitness level, whilst others indicated groups but not specific about the makeup.

A suggestion that Diabetes UK provide and organise more events was highlighted ensuring that it is clear about ones that people can get involved in.

Providing group sessions where people with diabetes can exercise in this environment was also suggested by one of the parent and carer comments.

Ensure those with responsibility for people with diabetes have appropriate knowledge of diabetes and exercise

Health care professionals

It was occasionally mentioned by people with diabetes or at risk of Type 2 diabetes, that an improvement that could increase their physical activity would be ensuring health care professionals are supportive of patients in their physical activity efforts. Also, that they have the knowledge and resources to be able to provide advice about exercising with diabetes and signpost patients to local services and facilities where they are able to exercise and be physically active.

Physical activity leaders

There was also a suggestion that anyone leading a physical activity or exercise has the relevant knowledge about diabetes, so that the exercise is safe. This was a theme that came particularly with the comments from parents and carers of people living with diabetes.

Improve the accessibility of services and facilities to exercise and be physically active

Reducing the cost of being physically active

A frequent barrier cited for not being more physically active was the cost of doing so and it was often suggested that Diabetes UK either provide or campaign for free or discounted facilities or activities for people living with diabetes. This was also highlighted from one person at risk of Type 2 diabetes, that access to free facilities would be beneficial if disabled.

Supporting local initiatives so that people with long term conditions can participate at a lower cost, also came out from the parents and carers comments.

Improving the accessibility and availability of activities

Not having the time was regularly mentioned as a reason to not being more physically active and in addition to cost, other elements of accessibility and availability of services were frequently mentioned as additional barriers. Issues highlighted include, the need to improve opening hours of facilities, travel to facilities being challenging and the need for adapted facilities and sessions that are appropriate for their physical needs. Related, there was a suggestion of lobbying areas of poor service.

Within the parents and carers comments it was suggested that sessions could be ran at different venues. For example, schools, cinemas and clubs.

Key Themes – Healthcare professionals *

Diabetes UK to...

- Ensure that healthcare professionals have the knowledge, advice and resources available to support their patients in being physically active
 - Produce resources that we can pass on to our patients
 - Increase healthcare professional knowledge
 - Signposting to exercise classes and facilities for physical activity
- Improve accessibility to physical activity and exercise facilities
 - Making exercise and physical activity more affordable
 - Support the availability of physical activity groups and events
- Improving access to other professionals to support patients to become more physically active

** Note that themes came from a small number of comments so some caution when reporting*

Ensure that healthcare professionals have the knowledge, advice and resources available to support their patients in being physically active

Produce resources that we can pass to our patients

A number of HCPs suggested that it would be useful for Diabetes UK to produce resources that they can pass on to their patients. This included resources of different formats (leaflets, website information, app) and of various themes surrounding diabetes and exercise including suggestions of physical activity, the physical and emotional benefits of physical activity and the impact of medication, for example insulin on physical activity. It was also highlighted by some that this should be tailored, for example for different physical abilities, ages, types of diabetes and for people with mental health difficulties or learning difficulties.

Increase Healthcare professional knowledge

A couple of comments identified a need for increasing HCPs own knowledge so they are better placed to support their patients with diabetes to be more physically active. This included education to be more holistic in their approach and specific education and advice around how to help with aspects of exercising with diabetes including insulin management and diet.

Signposting to exercise classes and facilities for physical activity

Being able to signpost patients to local classes and facilities was important. This for some was Diabetes UK signposting people themselves, and for others was ensuring that there is signposting information available that HCPs can use to pass on to their patients.

Improve accessibility to physical activity and exercise facilities

Making exercise and physical activity more affordable

A suggestion that came up by healthcare professionals that would support them to help their patients in being more physically active, was by making exercise and physical activity more affordable. One suggestion on how to do this was for Diabetes UK to campaign for free or reduced gym or facilities.

Support the availability of local physical activity groups and events

A further role for Diabetes UK in increasing the accessibility was supporting local physical activity groups and events. For some, this was Diabetes UK running and providing their own exercise and activity groups, for example ran by volunteers. Similarly, Diabetes UK providing more events was suggested.

Others, felt that there was a role in Diabetes UK supporting other national physical activity programmes. For example, health walks or Parkrun.

It was also highlighted by one healthcare professional that there was a role in the charity promoting physical activity as a positive change.

Improving access to other professionals to support patients to become more physically active

A couple of healthcare professionals mentioned that patients having access to other professionals' advice and support would be beneficial to HCPs when trying to help people with diabetes or at risk of Type 2 diabetes to be more physically active. One HCP mentioned having psychological support within the MDT would be beneficial, due to mental health difficulties. For example, depression being a barrier for physical activity. Another suggested making a physical activity coordinator available in waiting rooms for all patients.

Appendix 5

Area:

What is your connection to diabetes?

- I have Type 1 diabetes
- I have Type 2 diabetes
- I have another type of diabetes
- I have been told that I'm at risk of Type 2 diabetes
- I don't have diabetes
- I am a parent or carer of someone that has diabetes

Are you...

- Female
- Male
- Prefer not say

How old are you?

- Under 18
- 18-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80-89
- 90+
- Prefer not to say

How would you describe your physical activity levels?

- I am very active - doing at least 150 minutes of activity a week
- I am fairly active - doing 30-149 minutes of activity a week
- I am not active - doing less than 30 minutes of activity a week
- Prefer not to say