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JDRF

Barriers and drivers to technology

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Introduction

Supporting people with type 1 diabetes to access life-changing treatments 400,000 people in the UK have type 1 diabetes - a life-changing condition that requires regular daily attention.

Type 1 diabetes is caused when the autoimmune system attacks insulin-producing cells in the pancreas. It's not yet fully understood what triggers the attack. The result is a lifetime reliance on injected insulin to be able to function and live. The condition is relentless. A child diagnosed with type 1 diabetes at the age of five faces up to 19,000 injections and 50,000 finger prick blood tests by the time they are 18. A range of wearable medical devices already exists to help manage type 1 diabetes. However, only a small percentage of those living with the condition in the UK use these more technology-based treatments. And currently, just 30% of people with type 1 diabetes stay within their recommended blood glucose target range1, putting the majority at greater risk of complications such as kidney disease, nerve damage, heart disease and premature death. People with type 1 diabetes who use these medical technologies may find it easier to manage their glucose levels and thereby reduce these risks.

This is why JDRF has commissioned market research to understand the motivations and barriers people with type 1 diabetes face in making treatment choices. The findings will enable us to explore the types of support and interventions we can develop to help people living with type 1 diabetes choose the best possible treatments. The market research also highlights areas in which government, the Department of Health and Social Care and the NHS can improve support for people living with this life-changing condition. Increased frequency and length of appointment times to discuss treatment options and better diabetes technology education for healthcare professionals are key recommendations.

Thank you to our partners, Abbott Diabetes Care, Dexcom, Insulet International Ltd and Roche Diabetes Care, who support JDRF's Pathway to Choice programme, which aims to build awareness and access to type 1 diabetes technologies. This report is timely, providing an important insight into the experience of people living with type 1 diabetes. That experience informs our recommendations, contributing towards developing understanding, policy, and practice, which we firmly believe will lead to increased adoption of type 1 technologies and improved health outcomes for people living with type 1 diabetes.

Karen Addington,
JDRF Chief Executive

Background and Methodology

Our findings indicate that there are many complex reasons which can drive and prevent people engaging with technology-based options in the management of their type 1 diabetes. This research primarily explored people's barriers to using technology and this report breaks these into education

and access to information; financial limitations and socio-economic factors; attitudinal barriers and physical attributes of the technology.

This report provides the findings from both qualitative and quantitative research with individuals with type 1 diabetes and parents with children who have type 1 diabetes. It was important to access this group in order to understand the lived experience and barriers to blood glucose management technology and give a voice to these individuals. The combined methodological approach allowed for both statistical analysis as well as an exploration of people's awareness, attitudes, engagement with, anxieties about and impact of technology. This research does not advocate that everybody with type 1 diabetes must use technology-based solutions. We recognise that this is a personal decision. We do however stress that people with type 1 diabetes should know about the different technology-based options available to them. By drawing on people's direct experiences, we are able to make clear recommendations that would assist in empowering people to make informed choices about technology-based solutions and to know how to access this if they wish to do so.

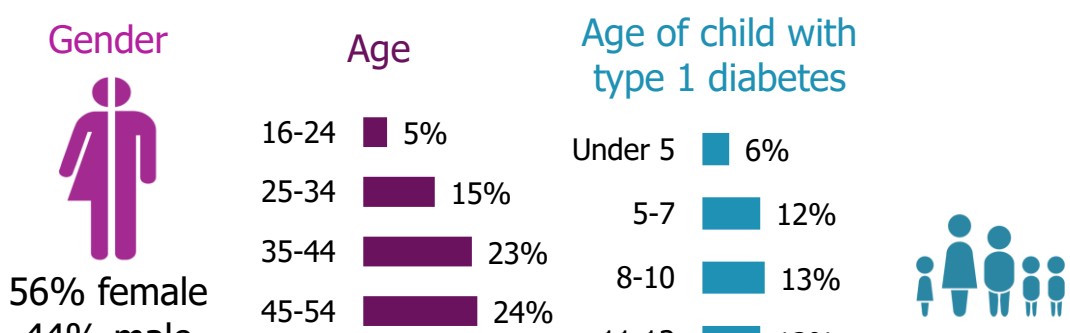
Qualitative research

This stage consisted of four focus groups carried out in August 2019, involving 24 people in London and Manchester. These groups included people with type 1 diabetes and 6 parents of children with type 1 diabetes, with a mix of men and women between the ages of 25 and 61. As these groups were exploring the barriers to technology access, the ideal recruitment would have been to have no current technology usage within the groups, however due to recruitment restrictions there were a few individuals who currently used either Continuous Glucose Management (CGM) or flash glucose monitoring. These individuals were encouraged not to share their experiences of these technologies until towards the end of the groups to allow for an open discussion about all of the technology.

Quantitative research

The quantitative stage of research consisted of an online survey in September 2019 with 363 participants. This included 105 parents of children with type 1 diabetes and 270 individuals who personally had type 1 diabetes. 12 of the participants were both parents of children with type 1 diabetes and had the condition themselves. As the demographic make-up of individuals with type 1 diabetes in the UK is not known, a natural fallout sampling method was used, and this gave a broad demographic spread of individuals as seen below:

Figure 1: Demographics of the participants of the quantitative research

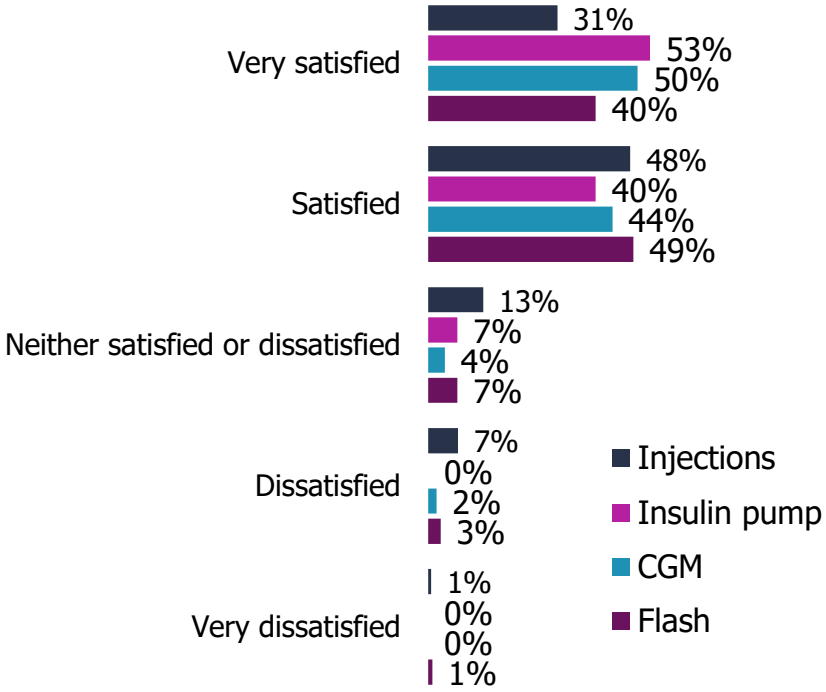


"To which gender do you identify the most"
"What is your age?"
"How old is your child with type 1 diabetes?"
"Have you (or your child) had personal experience of mental health problems?"
"What is your ethnic group? Choose one option that best describes your ethnic group or background"
"Which UK region do you live in?"
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Findings

Before we explore the main barriers that prevent people from accessing technology-based solutions, it is important to remind ourselves why this is important for people with type 1 diabetes. Our research reveals that overall, individuals who are using blood glucose management technology such as the insulin pump, Flash and/or CGM, are more satisfied with their usage and see a positive impact on their lives from using these. For example, figure 1 illustrates that 53% of people using the pump are very satisfied with this form of insulin delivery compared to 31% of people who are very satisfied with injections.

Figure 1: Satisfaction with different insulin delivery methods and technology

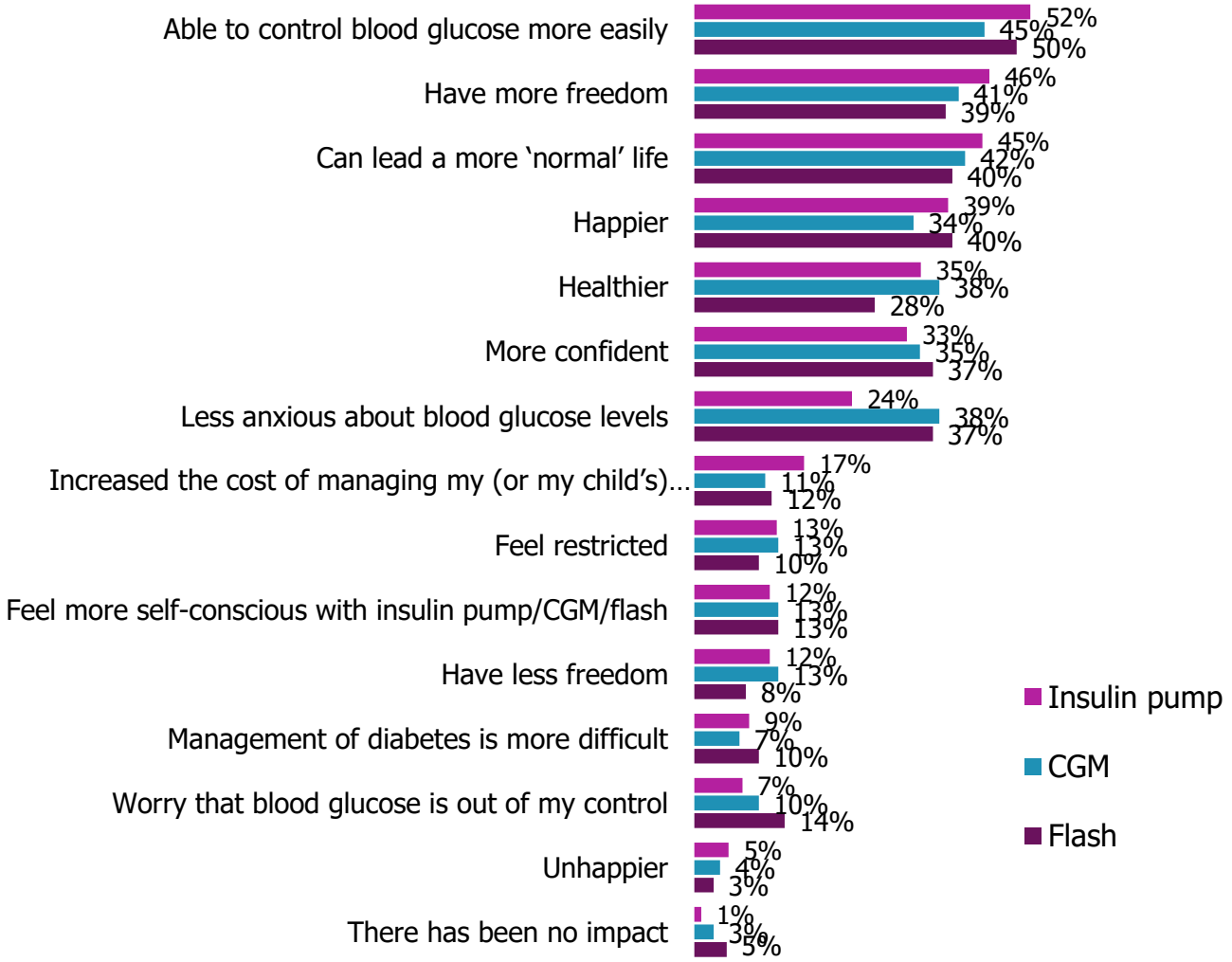


"Are you satisfied or dissatisfied with your (or your child's) use of injections/insulin pump to deliver insulin/CGM/flash?"

Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Alongside satisfaction, our data also suggests that technology-based options can make people with type 1 diabetes feel more able to control their blood glucose, to have more freedom and to lead a more 'normal' life. Interestingly, only 5% of people who are currently using the insulin pump feel unhappier with the impact of this technology and only 5% of people using the CGM feel it has had no impact on them. This suggests that, for many individuals, access to technology-based treatments is considered beneficial for the management of their blood glucose and the minimisation of long-term complications.

Figure 2: Impact of using blood glucose technology



"What impact do you think using the insulin pump/CGM/flash has had on you (or your child)?"
Base: 94/104/115 adults (currently using insulin pump/CGM/Flash) 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

*"I got the Freestyle Libre ...and it was **life-changing** …because you can see where you go during the day, how different foods affect you. Seeing an overall graph".*

*"I think it's **a game- changer**. I think if the NHS really wanted to stop long-term complications then you get the libre its great – the G6 is the next level, that's the best one – everyone's control will be so much better."*

"I think [CGM] it's the best think to come into the controlling type one world since the old term sliced bread"

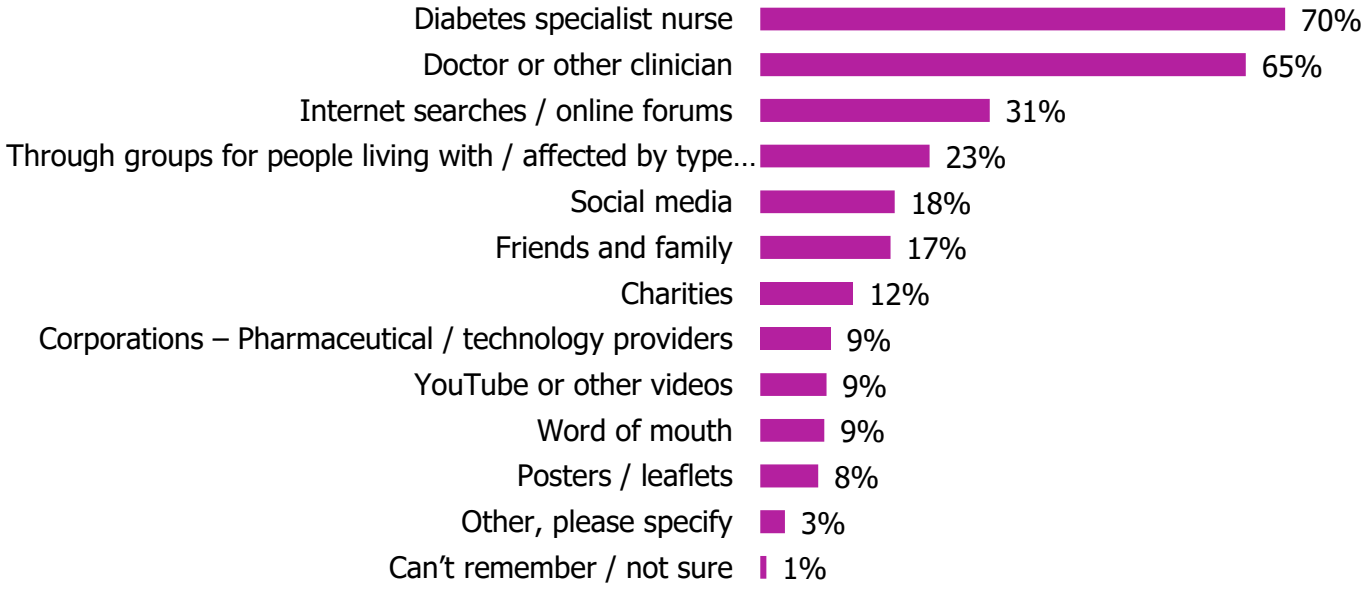
As noted earlier, not every person with type 1 diabetes wishes to choose a technology-based option to manage their blood glucose. For example, for some people, injections are a preferred method of

insulin delivery. Some people do not feel that the Flash or CGM, for example, would benefit them. Each choice should be right for the individual. However, we are aware that there is a large proportion of people with type 1 diabetes who are not familiar with technology, or the benefits that this may bring to them. This lack of awareness and in turn, engagement, stems from many different factors which this report explores.

Barriers: Education and access to information

Being aware of the technology options available is one of the most important steps to engaging and possibly using the technology. When asked where they receive information and support about their type 1 diabetes around two thirds of individuals are engaging with their diabetes specialist nurses or other clinicians to gain information. Only 31% of people are proactively looking on the internet or through online forums, and only 9% get advice on their diabetes management through word of mouth. This means that healthcare professionals are a trusted source of information and thus, incredibly important in both providing and disseminating information, including advice on technology-based options.

Figure 3: Places where individuals currently get information and support about their type 1 diabetes



"Where do you currently get information and support about your (or your child's) type 1 diabetes?"
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

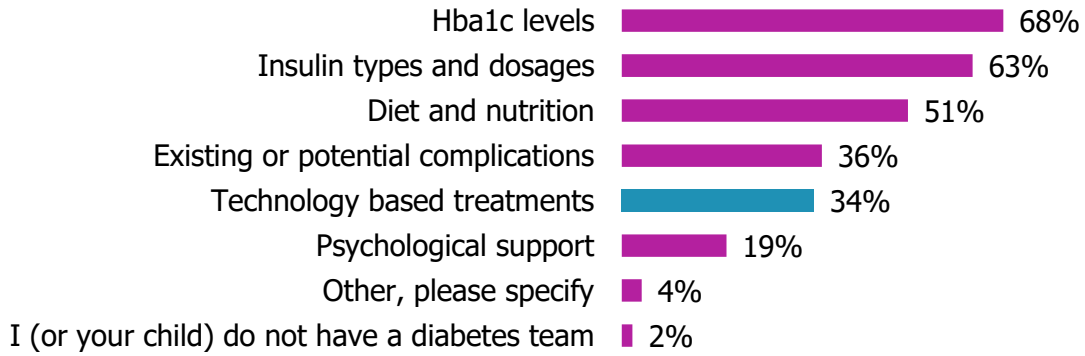
"Personally, I would feel more that HCP's have more authority. I would want to talk to somebody that probably has experience of different types of patients and sides of diabetes and they are able to see a bigger picture"

However, our research reveals that there is a perception that healthcare professionals are often resource and time limited. In addition, some people have to take time off work or education for appointments, which can add to the perceived constraints of time and opportunities to engage with

their healthcare professionals. Given that there are so many topics to cover for appointments about type 1 diabetes, such as Hba1c levels, insulin dosage and diet and nutrition advice; technology-based options are often not discussed.

"When I go to the hospital, I want to know that my blood pressure is ok, that my kidneys are fine, that I've not put on weight"

Figure 4: Areas that individuals speak to their diabetes team about



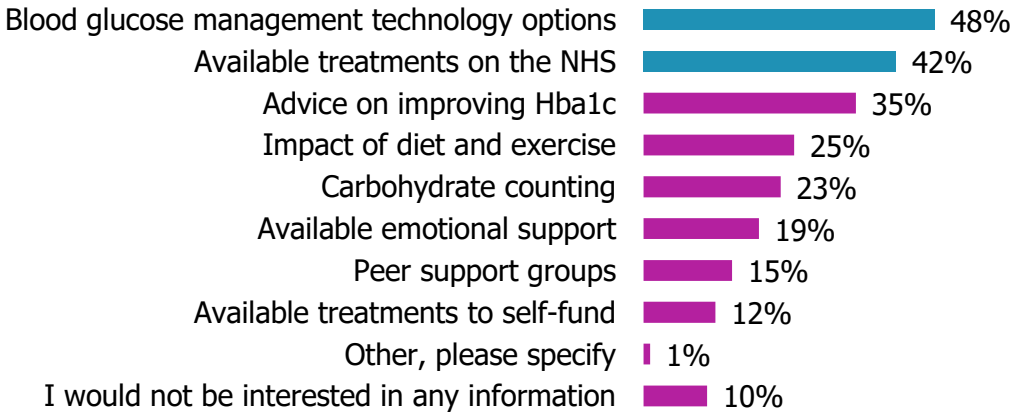
"What do you discuss with your (or your child's) diabetes team?"

Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

"You can't always choose when to have appointments, it's always a Thursday afternoon so you have to take time off work"

Given that there is a lack of opportunities to talk about technology-based options with healthcare professionals, it is not surprising that the desire for more information on this is key. Our data demonstrates that people with type 1 diabetes want to talk to their healthcare professional about technology-based options, with 48% saying this is the main area they would like more information on. However, as noted above, there is often little opportunity for this discussion which consequently, leaves people without the knowledge and advice they seek.

Figure 5: Areas that individuals want more information about their type 1 diabetes



"Which of the areas below would you be most interested to gain more information about type 1 diabetes in?"

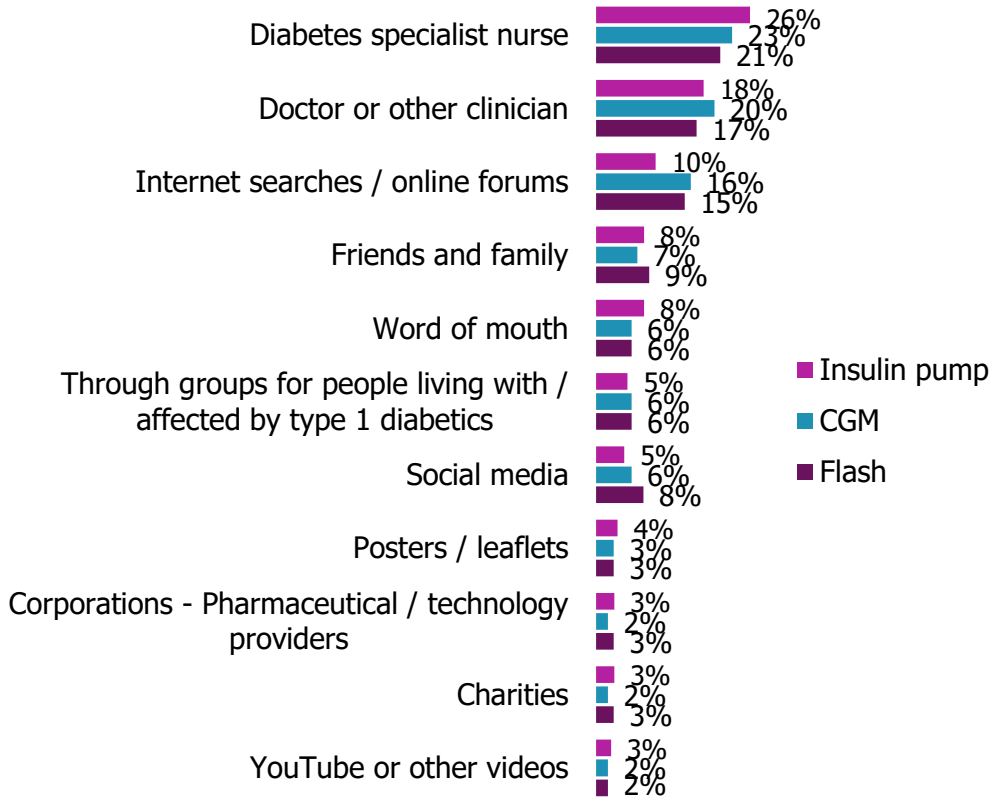
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

"No healthcare professional has ever mentioned the pump to me"

"Some [HCPs] know about technology and some don't"

Similarly, our data suggests that for those that are aware of the different technology options, the majority have learnt about this from their healthcare professionals. This reinforces how important healthcare professionals are in people's journey to access information on technology.

Figure 6: How individuals first became aware of the different technology options



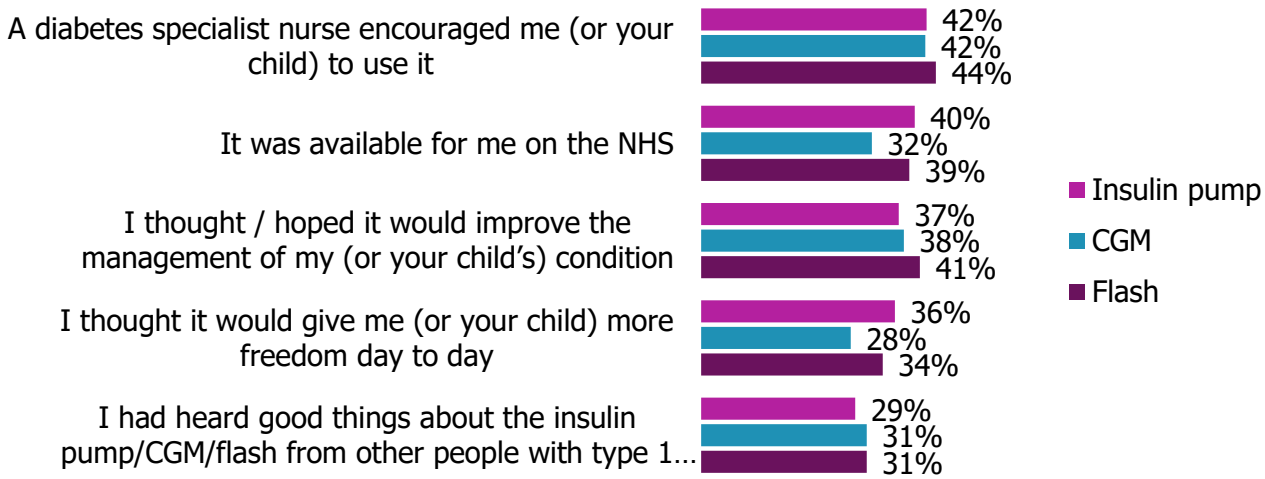
"How did you first become aware of the insulin pump/CGM/Flash?"

Base: 357 adults (aware of each technology) 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

The research illustrates that healthcare professionals play an integral role in engaging people in technology usage. They are a crucial trusted source of information. It is the encouragement of diabetes specialist nurses that is the key route to engagement with all technology options (insulin pump, CGM and Flash devices). Taking this into consideration, it is not surprising that a lack of recommendation from a healthcare professional is the main reason people state for not engaging with the technology[1].?

[1] See annex table I

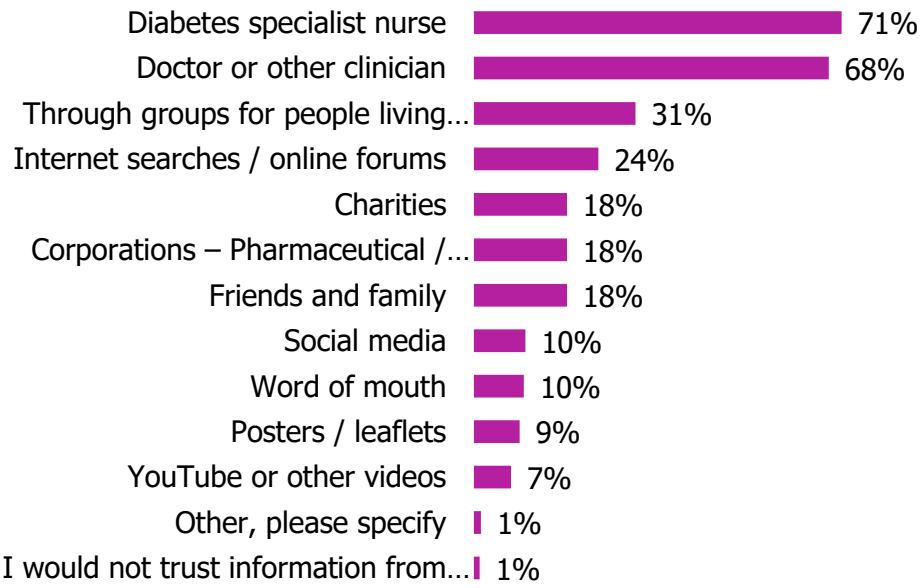
Figure 7: Top 5 reasons that individuals were encouraged to use different technology options



"You said that you (or your child) have used, or currently use the insulin pump/CGM/flash. What encouraged you to use this technology?"

Base: 135/156/174 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Figure 8: The places individuals trust to get information about blood glucose management technology



"Which of the following places / people would you trust to give you information about glucose management technology?"

Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Therefore, the research reveals there are various approaches that are needed to increase the awareness and educate individuals on technology-based options. More time is needed to discuss technology-based options in a professional healthcare setting. There needs to be consistent information across the country regarding different technology-based options and how some individuals might benefit. Moreover, there is a perception from individuals that there is still a 'postcode lottery' of information and engagement from healthcare professionals on this topic. This needs to change as all people with type 1diabetes should be able to access advice and information on methods which could improve their blood glucose management equally.

"It's a postcode lottery, it depends how sympathetic your consultant is"

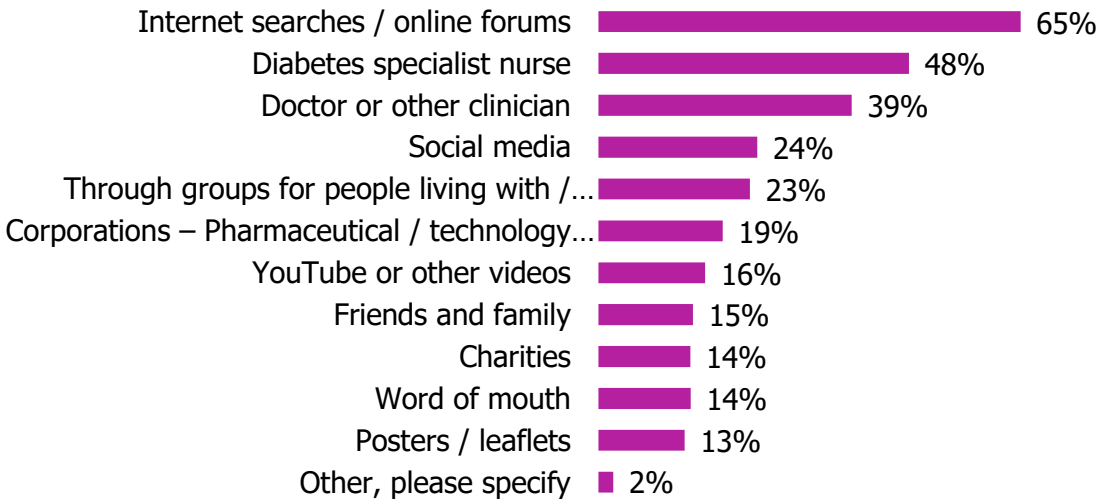
Internet and Groups

The findings from this study suggest that there is a need for people with type 1 diabetes to know where to look themselves for information in order to know what their options are, to feel empowered to ask the right questions and to make informed choices. We feel there is an important role for other organisations such as charities or specific forums for people with lived experiences to be involved in the dissemination of information and advice. In addition, increasing the access to information across all channels can help break the over-reliance on healthcare professionals.

We can see from the statistics that there are many individuals who use the internet or online forums to gain information about all aspects of their type 1 diabetes (31% see figure 2 above). The data also tells us that internet searches overtake healthcare professionals as a source of information on technology-based options with 65% of individuals looking for information across these channels (see figure 9). This suggests that individuals are not getting any, or enough, information from their healthcare professionals, and so are proactively looking online for information to fill their knowledge gap.

This does present a particular difficulty in that it is not clear where people are looking, and often random internet searchers may not always provide accurate information. There is a key opportunity for organisations, including charities such as JDRF, to provide accessible and relevant information for individuals who are looking at blood glucose technology. People need to know and be signposted to reliable sites with independent and clear information about different products and about how to approach healthcare professionals about this (especially if seeking NHS funding).

Figure 9: Where individuals looked for information about blood glucose management technology

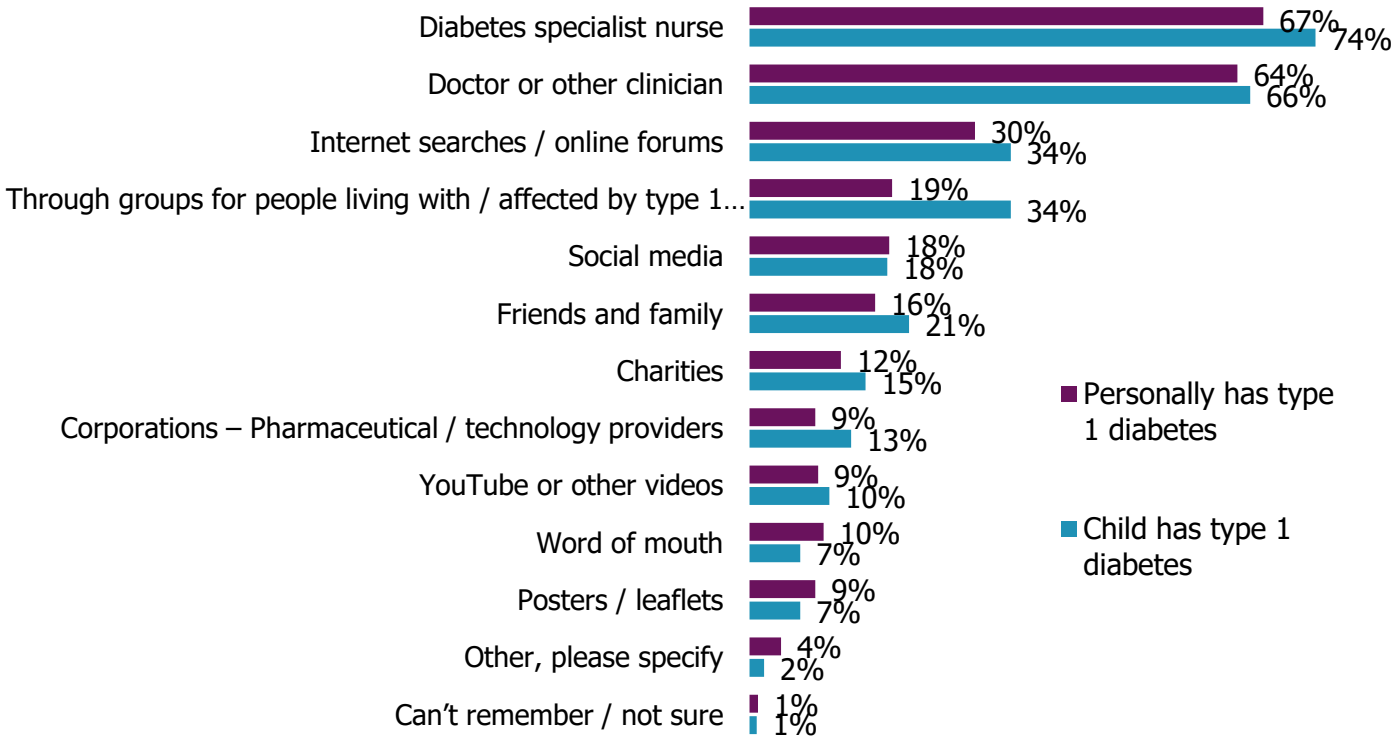


"You said that you (or your child) have used, or currently use the insulin pump/CGM/flash. What encouraged you to use this technology?"

Base: 262 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

From the data, we can also see that parents of children with type 1 diabetes are more likely to be already accessing internet groups and forums for advice. Interestingly, 34% of parents of children with type 1 diabetes say that they currently go to groups for information and support compared to only 19% of people with type 1 diabetes (see figure 10). Whilst it is obvious that parents want to understand as much about their child's condition as possible, it is not clear, why people with type 1 diabetes are not using such forums. One reason could be that some forums are focused primarily for parents or that some people with type 1 diabetes do not trust such sites. This reinforces the view that building and signposting people to trusted sites and online forums could be really beneficial for people with type 1 diabetes.

Figure 10: Where people with type 1 diabetes and parents of children with type 1 diabetes get information and support



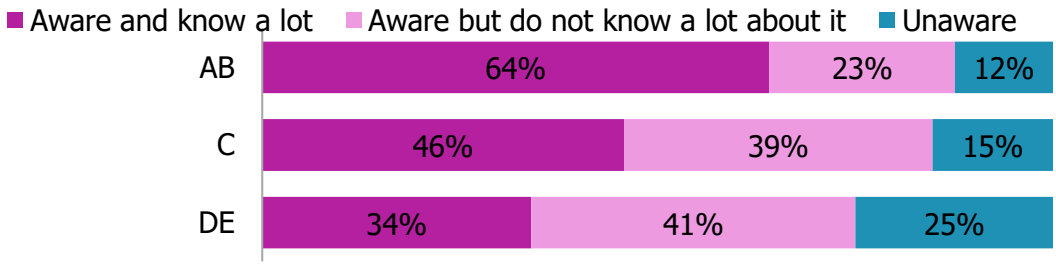
"Where do you currently get information and support about your (or your child's) type 1 diabetes?"
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Another area that could have potential for educating individuals about technology is through face to face groups and networks of people with type 1 diabetes and parents of children with type 1 diabetes. Even the focus groups for this study became an amazing space of discussion and education where individuals learnt from each other and explored the benefits of technology through their different knowledge levels. Many of the participants noted that the discussions had been really helpful for opening their eyes to blood glucose management technology. We would encourage more forums or spaces across the country where people can go to learn about and 'touch' and 'feel' different types of technology. We feel that such events will help to demystify myths and empower people to help take more ownership in their decisions regarding technology.

Barriers: Social-economic and Financial

When assessing the barriers to technology-based solutions, it is important to acknowledge the socio-economic status and finances of individuals. Our research indicates that the lower a person's social grade, the less likely they are to know about and use different types of technology. For example, 25% of people from social grade[2] DE have no awareness of Flash glucose monitoring technology, compared to only 12% in social grade AB. These findings are consistent when people were asked about all types of technology. Moreover, 32% of the higher social grade (AB) are currently using an insulin pump, compared to only 18% of people with type one diabetes from lower social grade (DE).

Figure 11: Awareness of Flash glucose management by social grade



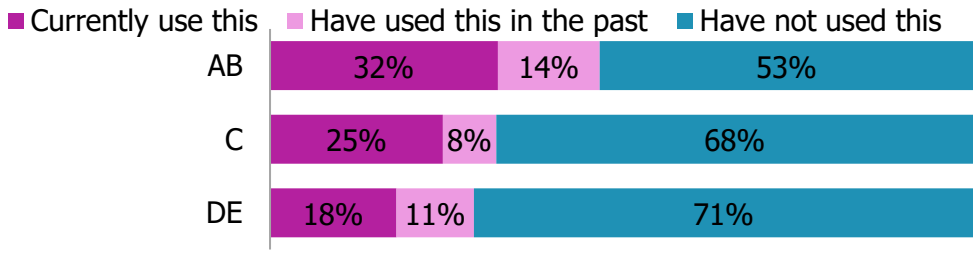
"Which of the technologies below are you aware of? Flash glucose monitoring (e.g. Freestyle Libre)"
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

The difference in awareness of the technology options is not only impacted by individual's social grade, as the region people live in also shows a difference. Those living in London have a much

[2] Social grades are often used for social classification and are based largely on people's professions. AB = Higher & intermediate managerial, administrative, professional occupations; C= supervisory and skilled manual and DE = Semi-skilled & unskilled manual occupations, Unemployed and lowest grade occupations

higher awareness of the different technologies, irrelevant of their social grade, with 70% of those in London being aware and know a lot about Flash glucose monitoring (compared to 50% overall) and 66% who know a lot about the insulin pump (compared to 47% overall) see Annex figure K.

Figure 12: Use of the insulin pump by social grade



"Which of these do you currently, or have you used, to manage your (or your child's) blood glucose levels? Insulin pump"

Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

"I don't work, I wouldn't have been able to afford it"

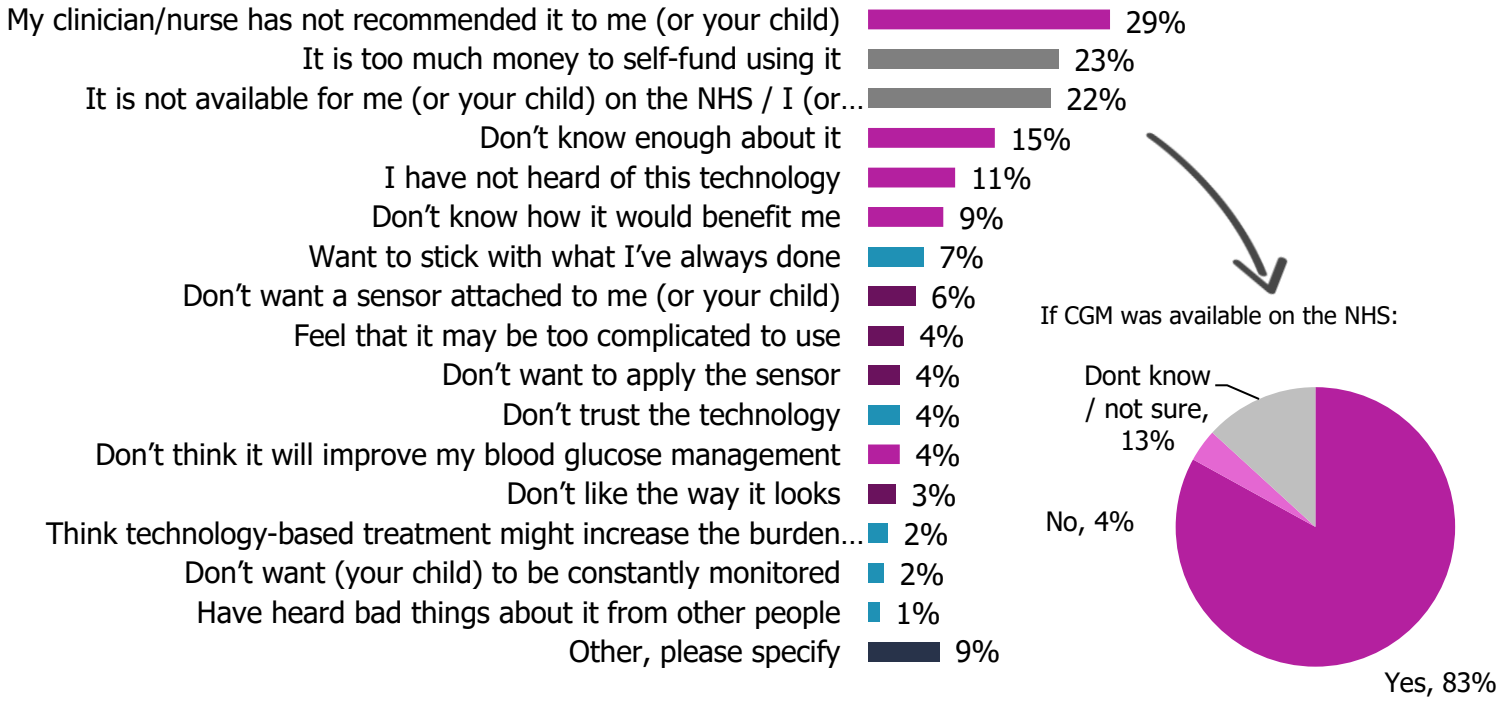
"It's just realising you've got to put in £4,000 -£5,000 in order to even get that … at the end of the day. It such a big outlay"

"If I have to self-fund it, I have to self-fund it"

During our focus groups, individual's finances were also often stated as a key barrier to engaging with the technology. Considering the quotes above, it is understandable that for some, the combination of not having the personal finances available to self-fund and technology not being available on the NHS (or individuals failing to meet the NHS criteria) is a non-negotiable restriction to their technology use. This is highlighted as more of an issue when we ask people about access to specific types of technology. For example, 23% of respondents stated that the CGM is too expensive to self-fund and 22% did not qualify for NHS funding as their main barrier. Of the 22% who do not qualify for NHS funding, 83% stated that they would want to use this technology if it was available on the NHS.

Therefore, acknowledging and trying to find the solutions to the financial and social barriers people face is a priority. The social grade statistics tell us that the lower a person's income, educational attainment, social capital and access to peer support, the less likely people are to know about and use technology. This is a key issue to be addressed.

Figure 13: Barriers to using continuous glucose monitoring and warmth to using the technology if it was available to individuals on the NHS who see their lack of access to the technology on the NHS as a barrier

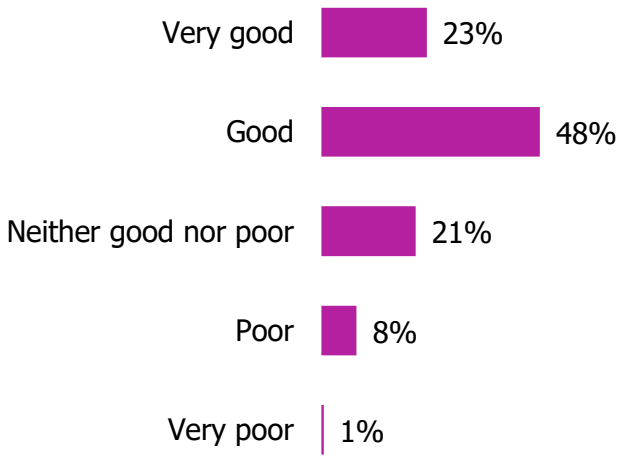


"Please select the reasons below that you (or your child) do not use continuous glucose monitoring (CGM)?"
"If continuous glucose monitoring (CGM) were available to you (or your child) on the NHS would you like to use this technology?"
Base: 207 / 53 adults (availability on NHS as barrier to CGM) 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Barriers: Attitudinal

Our research reveals that there are also many attitudinal barriers that exist which prevent people from accessing technology. We found that on the whole, people who feel happy or satisfied with their current diabetes management are more reluctant to change and adapt technology. For many, quite simply, change symbolises risks, which some are not willing to take, especially when they already think that their current blood glucose management is good.

Figure 14: How good individuals feel their current blood glucose management is



"How would you consider your (or your child's) current blood glucose management?"
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

This view is particularly pertinent in relation to the insulin pump which appears to be deemed as the most 'risky' of the technology options, as it involves a whole new way of delivering and understanding insulin and ratios rather than measuring blood glucose levels.

"I think for many people, if it's not broken don't fix it …when something works I'm not interested in anything else"

"I think if you manage fine with your injections, I don't think you feel there's any point [in using technology]"

Therefore, overcoming this attitudinal barrier is reliant on getting good and independent information out, but also on ensuring that the tangible benefits of different types of technology are understood by everyone. For example, people with type 1 diabetes need to know how different types of technology will demonstrably improve their day-to-day management and Hba1c levels. This research highlights that the more information about management, patterns and blood glucose levels that technology can provide, the more people feel in control and ultimately, the more interested people are in exploring the technology options.

"I think most diabetics who feel very happy with Libre is because that gives them a fuller picture than they've ever had before"

Barriers: Physical

Physical barriers that prevent people from accessing technology are inextricably linked to the attitudinal barriers. For instance, the more physical barriers exist, the more attitudinal barriers there are and vice versa. The research indicates that myths and misinformation about physical appearance can be key deterrents for the uptake of technology. This is especially the case with the insulin pump which appears to have many misconceptions regarding people hitting cannula sites (27% saying cannulas are a barrier to using the insulin pump), tubing being pulled out (20% stated the tubing was a barrier to using the pump), whether you can wear a pump and play sport, where you can put a pump if you are wearing a dress etc.

Furthermore, how 'discreet' the technology looks can be an issue for some. Our focus groups explored how many individuals with type 1 diabetes do not want to be defined buy their condition, and having visible or 'bulky' designs are not popular and can often make people feel self-conscious, and continuously aware of their condition.

"Change the size of that and how it looks. I would be quite happy to use it if I could go out and nobody would know I was doing it"

In addition, we can also see that where the benefits of technology are understood, the less the physical look becomes an issue. For example, people cited how they did not want 'anything attached

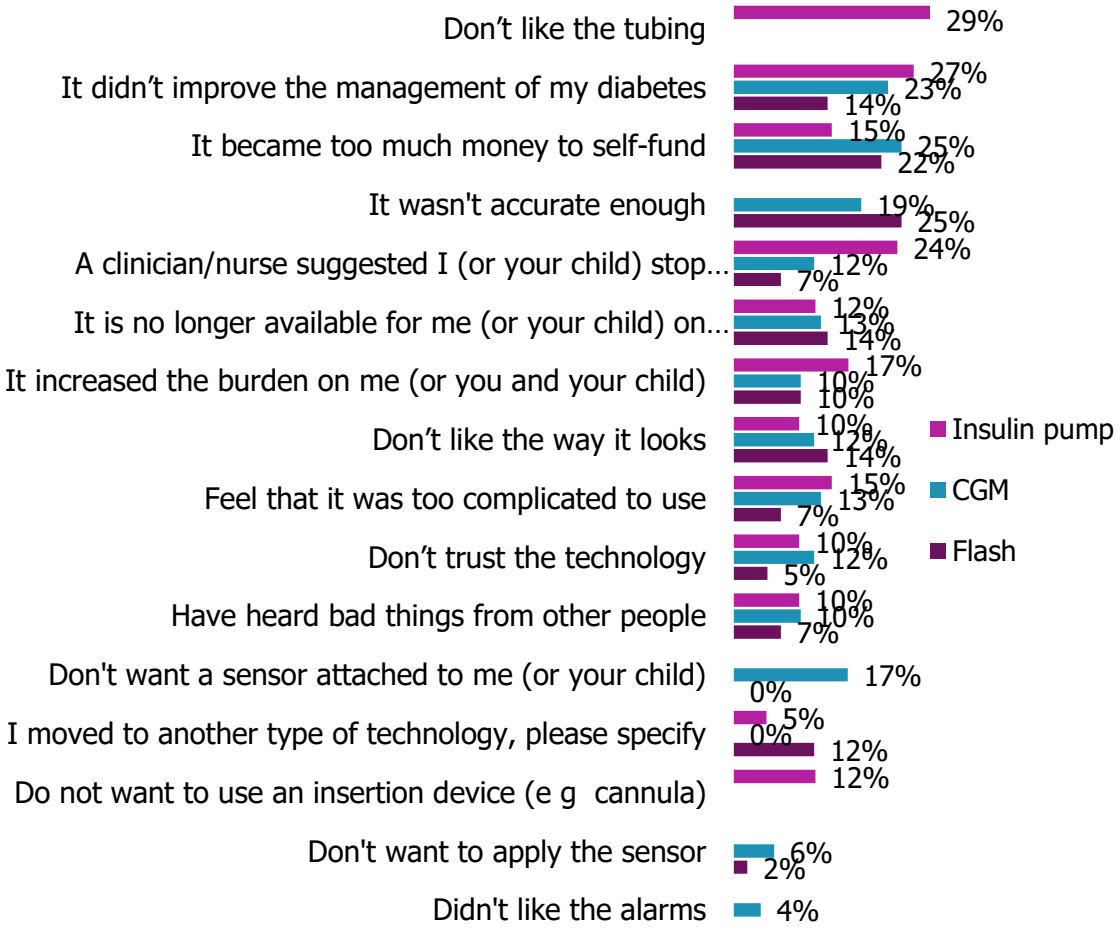
to them' as a barrier to the pump in the focus groups. However, during the same groups, people did not see this as problematic for the Flash or CGM as the perceived benefits outweighed concerns of technology being continuously worn.

Therefore, it is integral that people understand more about how technology may benefit them and to have opportunities to see different types of technology in order to make informed choices. Physical barriers can be overcome, if the education and attitudinal issues are addressed.

Barriers for retention

As part of understanding why people are not using technology, it is important to state that some people have tried these solutions and have not continued. There are many different reasons for this. We can see from the data that some of the barriers which prevent people using technology can also prevent people continuing with this technology. For example, 25% of people who stopped using the CGM cited finance reasons/burdens of self-funding as their main reason for stopping; 24% stated that a clinician/diabetic nurse recommended they stop using the technology (although the rationale behind this are unknown) and 29% referred to the tubing of the insulin pump as a reason for not continuing with its use. This implies that educational, financial and physical barriers can still interrupt people's use of technology. Moreover, 27% and 23% stated that they felt the insulin pump and CGM respectively did not improved their blood glucose management. What is not clear from the data alone is for how long people were using the technology, and how much support they got, especially in their first few months of using a new device. For instance, there could be potential gaps in providing information and support for people to help them adjust during their transition to technology.

Figure 15: Why individuals who have used technology in the past stopped using it



"You said that you (or your child) have used the insulin pump in the past, why have you (or your child) stopped using this technology?"

Base: 41/52/59 (previously used insulin pump/CGM/Flash) adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Conclusions

Therefore, acknowledging and trying to find the solutions to the financial and social barriers people face is a priority. The social grade statistics tell us that along the lower a person's income, educational attainment, social capital and access to peer support the less likely people are to know about and use technology. This is a key issue to be addressed.

Barriers: Attitudinal

Our research reveals that there are also many attitudinal barriers that exist which prevent people accessing technology. On the whole, people who are happy or satisfied with their current diabetes management are more reluctant to change and adapt technology. For many, change symbolises risks, which some are not willing to take.

"I think for many people, if it's not broken don't fix it …when something works I'm not interested in anything else"

"I think if you manage fine with your injections, I don't think you feel there's any point [in using technology]"

Therefore, overcoming this attitudinal barrier is reliant on getting good and independent information out, but also by ensuring that the tangible benefits of different types of technology are understood by everyone. For example, people with type 1 diabetes need to know how different types of technology will demonstrably improve their day-to-day management and Hba1c levels. This research demonstrates that the more information about management, patterns and blood glucose levels that technology can provide, the more people feel in control and ultimately, the more interested people are in exploring the technology options.

Barriers: Physical

Physical barriers that prevent people accessing technology are inextricably linked to the attitudinal barriers. For instance, the more physical barriers exist, the more attitudinal barriers there are, and vice versa. Our research indicates that myths and misinformation about physical appearance can be key deterrents for the uptake of technology. These barriers can be overcome through education and exposure to updated technology as many people are making decisions to dismiss technology because of information they heard many years ago.

Furthermore, how 'discreet' the technology looks can be an issue for some. Our focus groups explored how many individuals with type 1 diabetes do not want to be defined by their condition, and having visible treatment technology can make people feel self-conscious and continuously aware of their condition.

"I would be quite happy to use it if I could go out and nobody would know I was doing it"

Therefore, it is integral that people understand more about how technology may benefit them and to have opportunities to see different types of technology in order to make informed choices. Physical barriers can be overcome, if the education and attitudinal issues are addressed.

Recommendations

JDRF believes everyone who wants and would benefit from type 1 diabetes technology should gain access to it. The insights from this report have informed our following recommendations:

1. People with type 1 diabetes should have more time with specialist healthcare professionals at appointments. Our findings clearly show that people with type 1 diabetes across all socio-economic groups need more time with their healthcare professionals at appointments.

- Consider offering virtual clinics to people with type 1 diabetes, to reduce travel and waiting time, encourage increased uptake of appointments and continued attendance. Our research shows that 9% of people see their diabetes team less than once a year.

- Allow extra time for type 1 technology to be discussed at each clinician appointment, following the type 1 technology pathway.

2. Healthcare professionals to receive mandatory training on type 1 diabetes technology. The most recent National Diabetes Insulin Pump Audit 2017/2018 recommends "considering whether there is adequate understanding capacity and capability to explain and provide pump treatment" to people with type 1 diabetes."

- We want the NHS to ensure all type 1 diabetes clinicians are trained and kept up to date on type 1 diabetes technology on a regular basis, to be able to recommend the most suitable device for a person's needs.

- The NHS should provide protected time for training of HCPs on type 1 technology and its funding pathways, while also taking into account shift patterns and agile ways of training.

- Details of clinics with trained specialists should be made publicly available, so that people with type 1 diabetes can be confident in approaching their clinician about technology.

3. Clinical commissioning groups to do more to reach people with type 1 diabetes from lower socio-economic groups. Our research shows that people with type 1 diabetes from this group are less likely to be aware of type 1 technology. Just 18% of respondents from this group discuss technology at their clinician appointments, compared to 46% of the least deprived. The National Diabetes Insulin Pump Audit 2017/2018 audit shows that pump use remains lower among people experiencing greater levels of deprivation.

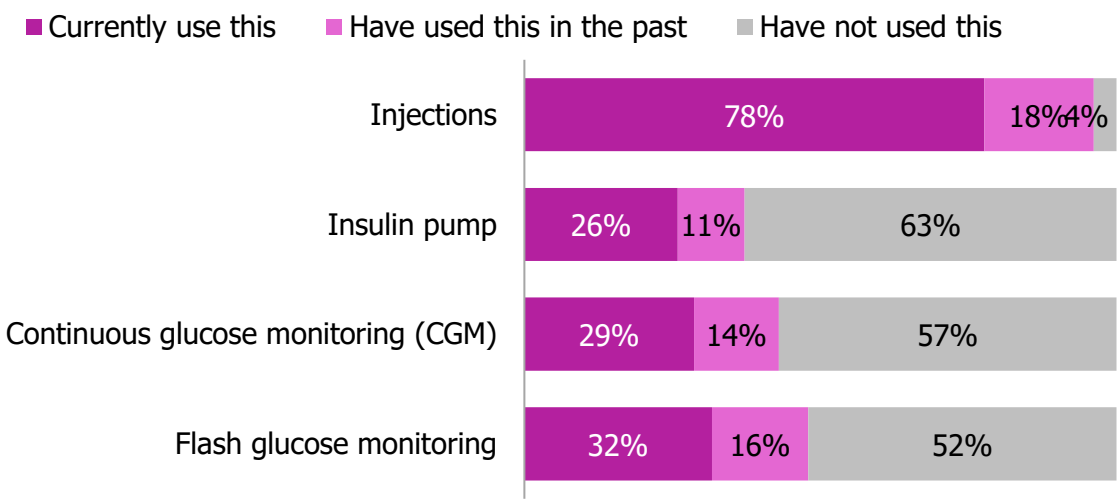
- All CCGs to base their type 1 commissioning policies around NICE guidelines with regards to type 1 technology, ensuring people who meet the criteria for diabetes technology are offered it, encouraging the adoption of best practice from around the country.

Create a national diabetes register, modelled on Scotland's SCI-Diabetes. This would have several functions including mapping type 1 technology uptake, providing regional statistics regarding health outcomes, and empowering clinicians to see patient data in one system. Ideally, the register could also track which healthcare professionals are trained in which type 1 technologies.

Appendix

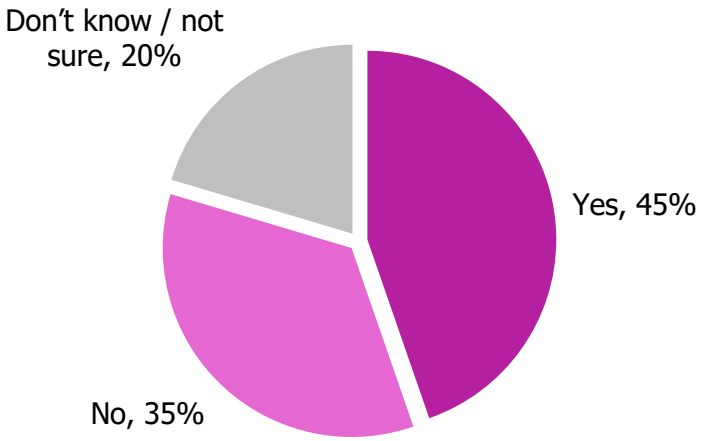
Useful extra data

Figure A: Current and past use of the different blood glucose technology options



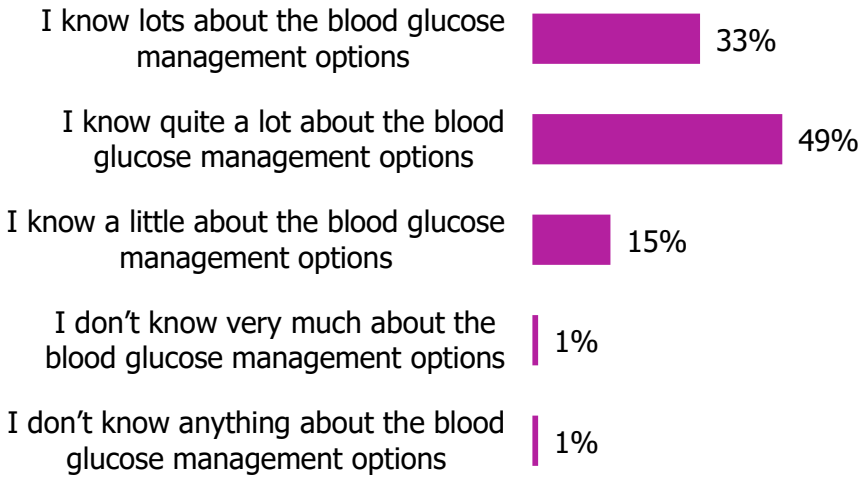
"Which of these do you currently, or have you used, to manage your (or your child's) blood glucose levels?"
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Figure B: individuals who want to engage more with their diabetes team



"Would you like to engage more with your (or your child's) diabetes team?"
Base: 358 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

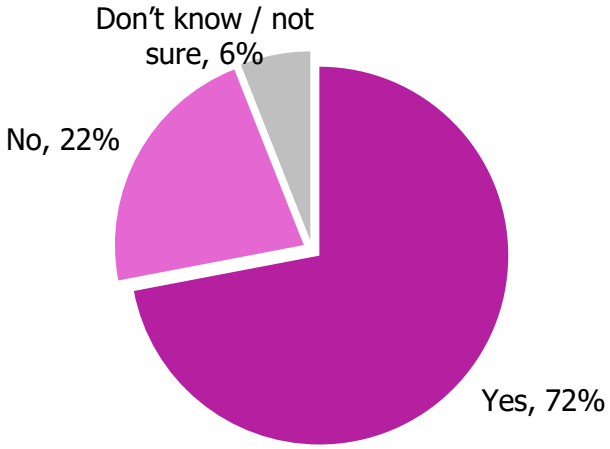
Figure C: How much people feel they know about their blood glucose management options



"How much do you feel that you currently know about your (or your child's) blood glucose management options?"

Base: 358 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

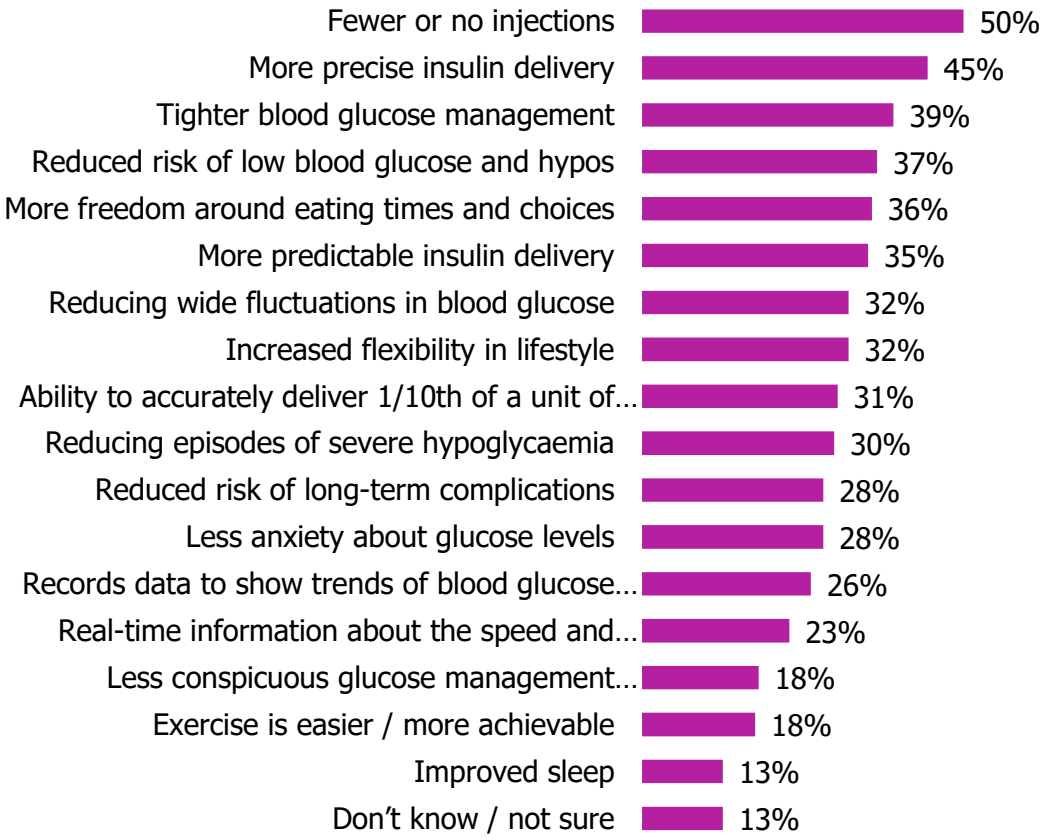
Figure D: If people have looked for information about blood glucose management technology



"Have you previously looked for information about technology to help your blood glucose management?"

Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

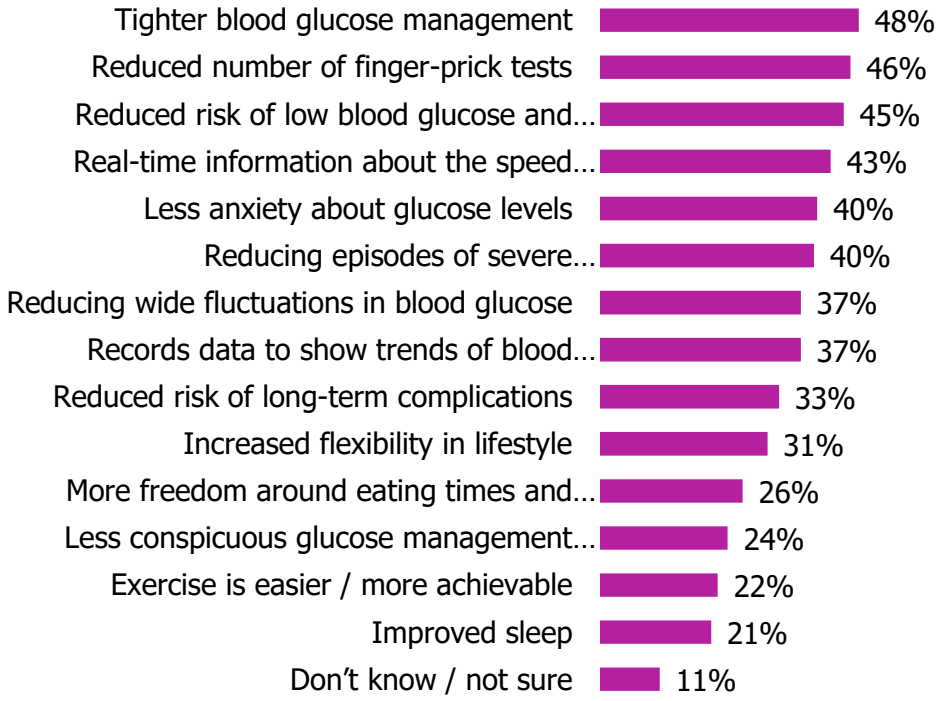
Figure E: Awareness of the benefits of using the insulin pump



"Which of the following options do you think are the benefits of the insulin pump?"

Base: 357 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

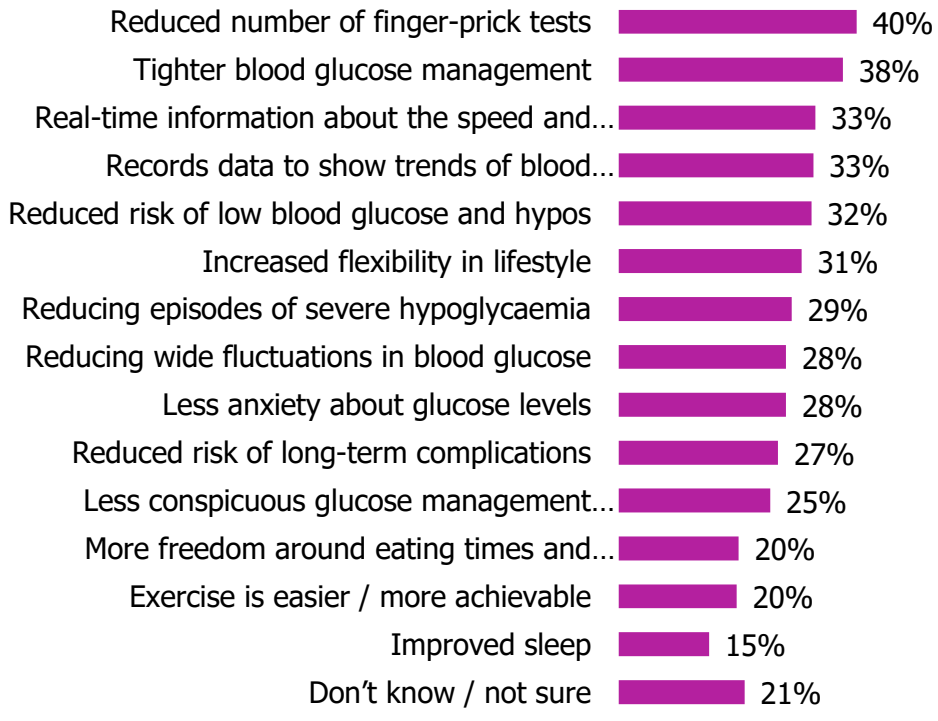
Figure F: Awareness of the benefits of using CGM



"Which of the following options do you think are the benefits of the CGM?"

Base: 326 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

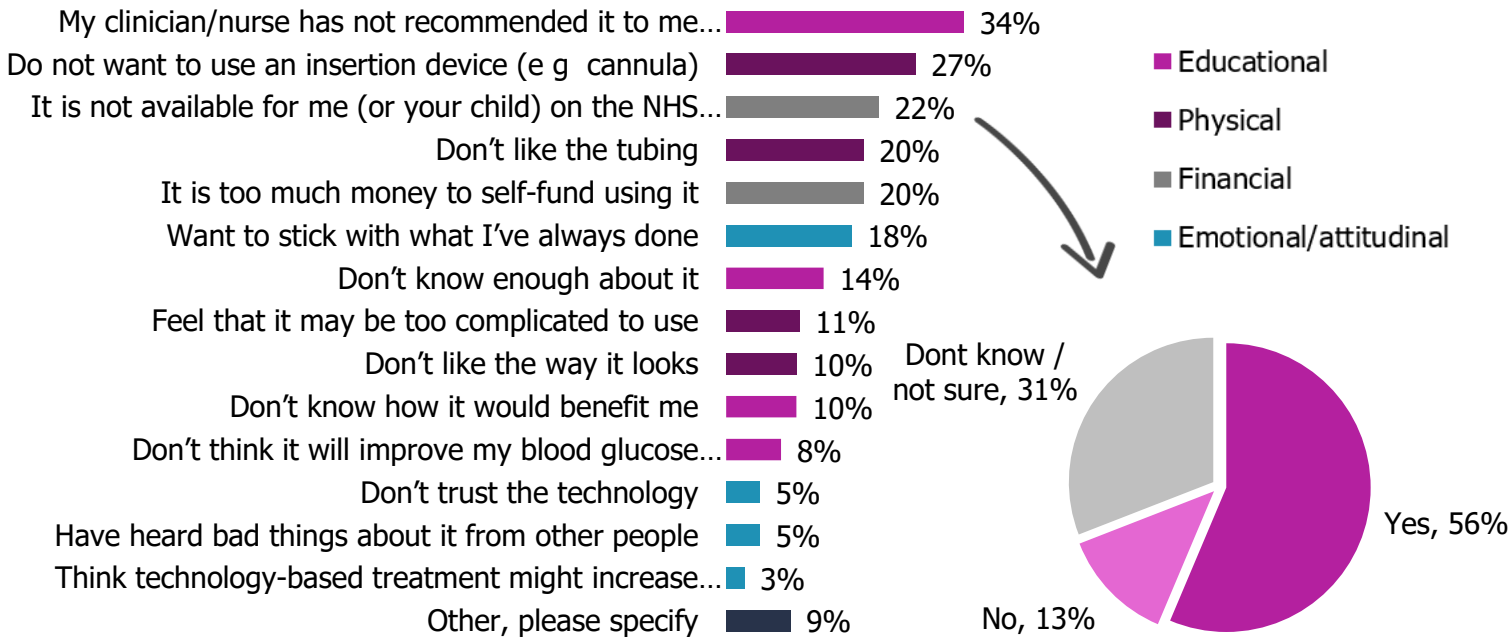
Figure G: Awareness of the benefits of using Flash



"Which of the following options do you think are the benefits of the Flash?"

Base: 302 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Figure H: Barriers to using the insulin pump

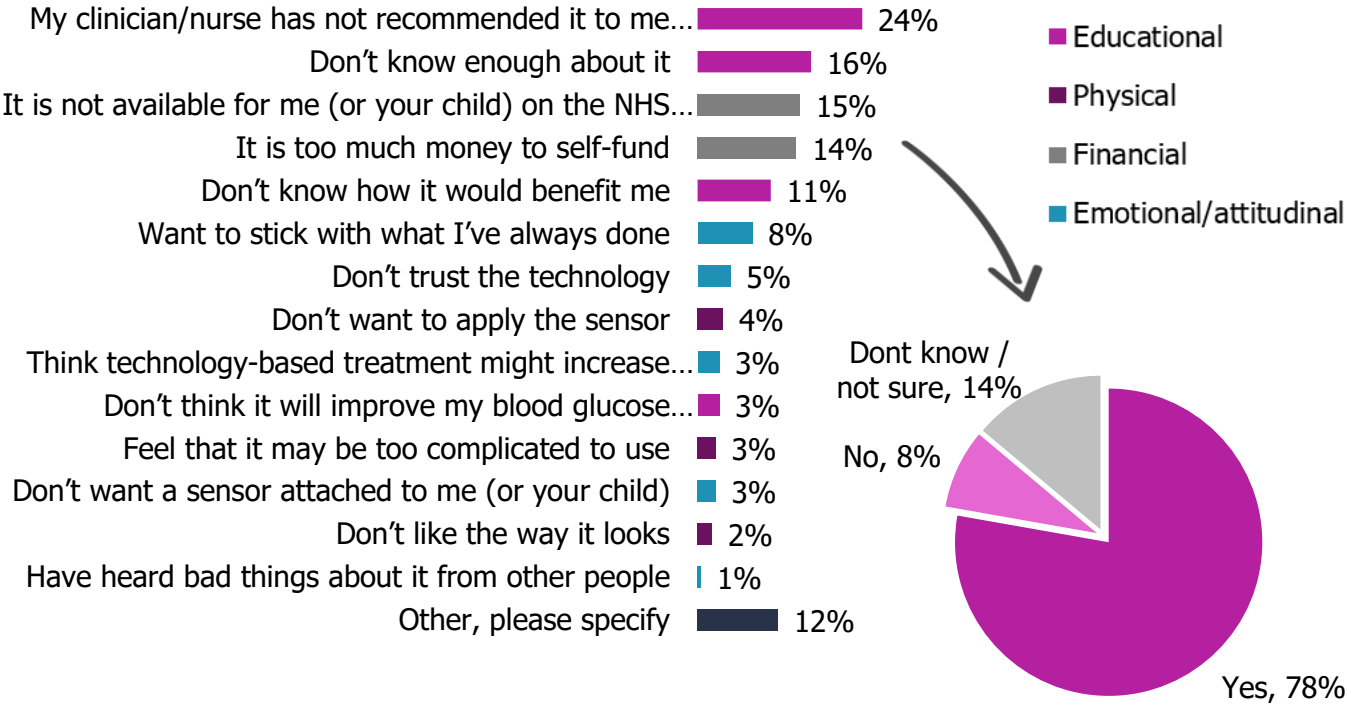


"Please select the reasons below that you (or your child) do not use the insulin pump?"

"If the insulin pump were available to you (or your child) on the NHS would you like to use this technology?"

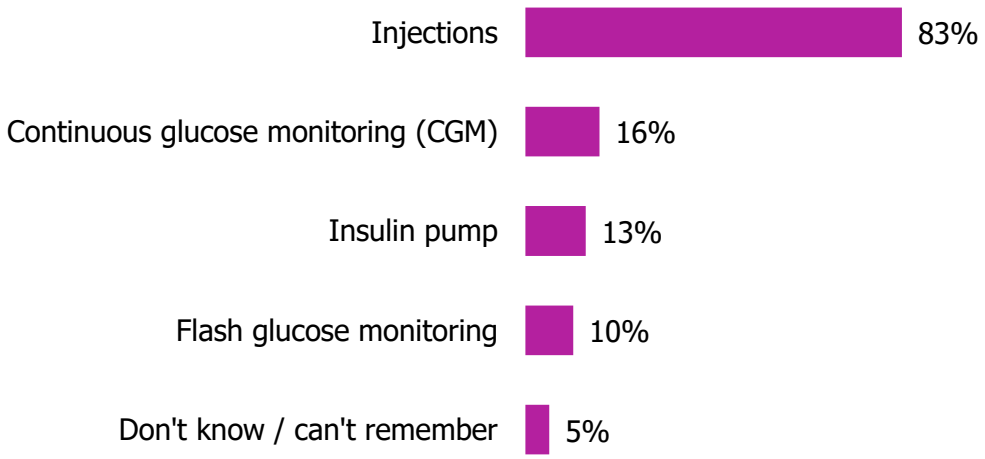
Base: 228 adults (have not used insulin pump) 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Figure I: Barriers to using Flash glucose monitoring



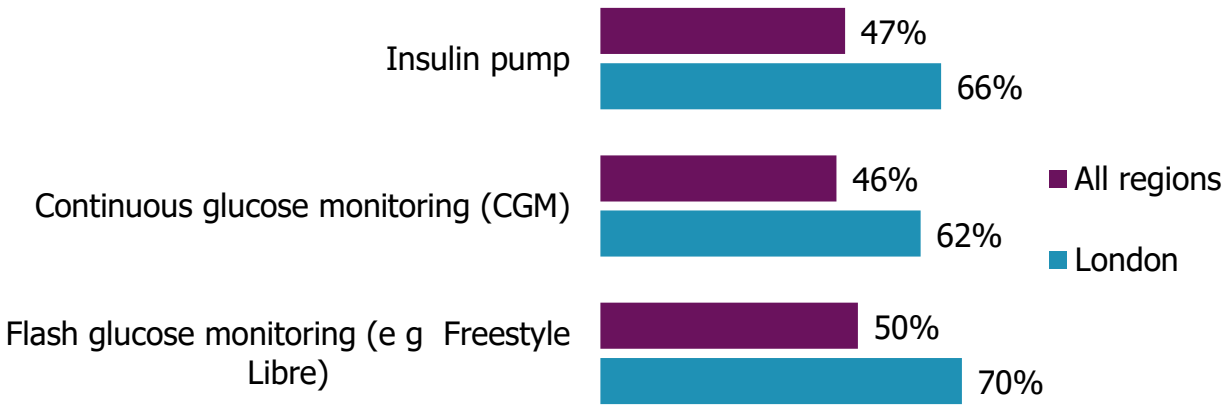
"Please select the reasons below that you (or your child) do not use flash glucose monitoring?"
"If flash glucose monitoring were available to you (or your child) on the NHS would you like to use this technology?"
Base: 228 adults (have not used flash) 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Figure J: Which options individuals were offered when they were diagnosed



"When you (or your child) were first diagnosed with type 1 diabetes which of these options were you offered?"
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

Figure K: People who are 'Aware and know a lot' about different technology between London and the average across the country



"Which of the technologies below are you aware of?" Aware and know a lot
Base: 363 adults 16+, Britain | Source: JDRF, Barriers and drivers to technology, Sept 19, nfpSynergy

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