Diabetes Education in England: *NHS Healthy Living for People with Diabetes* Does Not Meet the Needs of People with Type 2 Diabetes

Sean D Wheatley[1*], PhD, Science and Research Lead

Trudi A Deakin[1], RD, PhD, Chief Executive Officer

[1] X-PERT Health, Hebden Bridge, UK

* Corresponding author: Sean.Wheatley@XPERTHealth.org.uk

Key points

- Digital diabetes education programmes can have benefits but are not a replacement for group-based options.
- NHS Healthy Living for People with Diabetes, a digital diabetes education programme that is available for free throughout England, has major limitations.
- There is no direct evidence supporting the use of NHS Healthy Living, as it is significantly different to the predecessor programmes which had been the subject of the studies which were carried out.
- The indirect evidence that is available suggests that NHS Healthy Living is not likely to help participants achieve meaningful improvements in blood glucose control or other markers of health.
- It is also unlikely to help participants reduce medication needs, achieve remission, or feel more empowered; whilst there are reasonable doubts as to whether it is truly cost-effective.
- The content of NHS Healthy Living is outdated and fails to reflect the positive messages that contemporary evidence allows, including that type 2 diabetes does not need to be progressive, remission is possible for many, and a range of dietary approaches can be effective.
- There are also concerns that NHS Healthy Living may increase health inequalities through being less accessible for individuals from certain groups.
- The way NHS Healthy Living has been promoted has lacked transparency and is often misleading, with questions remaining around its selection for national implementation.

Abstract

In recent years digital diabetes education programmes have become increasingly popular. Although they have clear benefits, they should not be considered to provide a complete solution to meet the educational needs of all people with type 2 diabetes. NHS Healthy Living for People with Diabetes, a digital diabetes education programme, has been made available throughout England without cost to NHS commissioners or patients. This makes the programme an attractive proposition for stretched healthcare services. There is however no direct evidence supporting the use of NHS Healthy Living, as it is significantly different to the predecessor programmes which had been the subject of the studies which were carried out. The (indirect) evidence that is available does not suggest that participation in the programme is likely to lead to clinically meaningful improvements in blood glucose control, a reduced need for diabetes medications, remission of type 2 diabetes, increased patient empowerment, or reduced diabetes-related distress. There are also concerns that it fails to reflect significant shifts in how type 2 diabetes is considered and managed (including that the condition need not be progressive and that a range of dietary approaches can be effective), that it may not be truly cost-effective, and that it might increase health inequalities. As such, questions should be asked as to how and why this programme has been chosen for national implementation.

Introduction

It is estimated that nearly 6 million people in the UK are living with diabetes, 90% of whom have type 2 diabetes[1]. Type 2 diabetes can lead to serious health consequences[2] and places a huge financial burden on health services[3], so effective care is essential. Group-based structured education programmes are well established as a part of routine care for people with type 2 diabetes and within National Institute for Health and Care Excellence (NICE) guidelines[4], with clear and consistent evidence supporting the efficacy of such approaches[5-9].

In recent years, digital diabetes education programmes have become increasingly popular. A wide range of options are now available, including the NHS Healthy Living for People with Diabetes Programme (hereafter referred to simply as "NHS Healthy Living"). This programme is available throughout England without cost to NHS commissioners or patients, making it an attractive proposition for stretched healthcare services. It is however essential that we give pause for thought when considering what options are made available to patients. Choices should not be made purely based on short-term financial considerations, as such decisions risk a significant increase in longer-term costs and complications if the programmes adopted are ineffective.

It is also important to bear in mind that although NHS Healthy Living does not cost NHS providers or patients anything, the national implementation of the programme constitutes a significant investment of NHS funds. It is therefore important to consider whether this money has been utilised fairly and justifiably, or whether it could have been better applied elsewhere. To this end, the current article critically appraises NHS Health Living, and the evidence used to support its adoption.

Before proceeding, it is worth noting that it is not the stated intention of NHS Health Living to displace other forms of education for people with diabetes. In fact, NHS England has communicated to NHS providers that this programme was intended to be an *addition* to existing offerings, not a replacement for them[10]. However, the authors are aware of multiple cases where the replacement of existing offerings with NHS Healthy Living is being proposed. Further, in a recent appraisal of the national implementation of the programme it is reported that some areas considered NHS Health Living to be a duplication of existing programmes, with one case site stopping commissioning another programme as

a result[10]. As such, the risk of NHS Healthy Living displacing other programmes needs to be taken seriously, and consideration needs to be afforded to the potential impact this could have on the quality of diabetes care in England.

The case for digital programmes

Growing evidence suggests that digital education programmes can be effective in the context of type 2 diabetes management[11-13]. There are also clear potential benefits to the use of digital programmes compared to the use of face-to-face group programmes, some of which are summarised in Table 1. Importantly, the appropriate utilisation of such programmes may help to reduce inequalities and increase the uptake of diabetes education. It is beyond the scope of the current article to explore the general benefits of digital programmes further, but it is clear they have a place as part of the menu of options available to support people with type 2 diabetes in trying to improve their health.

Table 1. Possible Benefits of Digital Diabetes Education Programmes

More accessible for people who *cannot* attend a group programme*.
May reduce costs for participants (e.g., by removing costs associated with transport or childcare)*.
Increased flexibility – participants can access programmes at times, and in places, that suit them.
May increase engagement with individuals who *will not* attend a group programme.
More easily scaled up than group programmes (e.g., by removing limits based on the availability of staff and/or physical spaces from which to deliver programmes*).
Reduced delivery costs (e.g., through removal of the need to pay staff and/or for physical spaces from which to deliver programmes*)[†].
Shorter waiting times (i.e., participants can be set-up almost immediately, rather than having to wait for a place on a suitable programme to be available).
Less impact if an individual does not engage (i.e., if an individual does not attend a group programme their place cannot usually be filled, so is wasted – this is not the case with digital programmes).
Content can often be updated more quickly and easily.

* These issues can also be reduced or removed through the provision of remotely delivered group programmes.

[†] This does not consider possible costs associated with development or the provision of additional support.

NHS Healthy Living

NHS Healthy Living is one such digital education programme. It was derived from HeLP-Diabetes, an online education programme developed at University College London, and is well placed to command a significant proportion of the diabetes education "market". This is predominantly because it has been made free to access, as a result of significant funding from NHS England. Its branding as an NHS programme also gives it an advantage over its competition. These advantages mean it is particularly important that commissioners, decision makers and healthcare professionals are aware of its strengths and limitations, to allow them to make informed decisions about how to use it. Cost should never be the only factor considered when making healthcare decisions on an individual or systemic basis. As it has been adopted for national rollout, it is also reasonable to expect a high level of evidence to support its effectiveness.

NHS Healthy Living – Strengths

Potential strengths of NHS Healthy living, in addition to those of digital diabetes education programmes more broadly (see Table 1), are not limited to the absence of cost to NHS providers and patients. One such strength is that the programme presents information through a mixture of modalities, including text-based articles, videos, and interactive quizzes. This helps to ensure the content is more engaging to the user than if a single method has been used (e.g., if all content is purely text based and/or lacks interactive elements). There are also a range of tracking tools, including a food diary and the ability to enter data for steps, weight and blood glucose control. These tools are useful for patients and may help to encourage prolonged engagement.

Another key benefit is the inclusion of interviews with people living with diabetes. This helps to provide a patient perspective and to make the programme more personable, something that is often lacking in digital interventions. By comparison, the opportunity to engage with other people with diabetes during group-based programmes can sometimes be as important as the content of the education. The inclusion of this content in NHS Healthy Living cannot completely replicate the interactions that take place during group programmes, but they may help to mitigate their loss.

Finally, the inclusion of goal setting tools is another strength, particularly as steps asking the individual to consider how important their goal is to them, and to think about potential barriers between them and their goal(s), are included. Many goal setting tools omit these important steps, and focus on "what" rather than "why". It is the "why" that keeps people going if things become difficult though, as they often do when making lifestyle changes.

NHS Healthy Living – Limitations

Despite these general strengths, there are some key concerns and limitations with NHS Healthy Living. These issues, which are summarised in Table 2 and explored further below, raise questions as to whether NHS Health Living should be widely promoted, and as to how this programme came to be the NHS' choice for national roll out over any of the other available options. This is particularly the case given the absence of an open, transparent and competitive process.

Table 2. Limitations of NHS Healthy Living for People with Diabetes

No direct evidence to support its use*
Poor uptake†
Poor completion rates†
Small, non-clinically meaningful improvements in blood glucose control†
No reduction in medication needs†
No evidence that participants are likely to achieve remission†
No improvement in body weight management†
No improvement in blood pressure†
No improvements in blood lipid levels†
No increase in feelings of empowerment or self-efficacy†
No reduction in diabetes related distress†
Uncertainty over cost-effectiveness†
Removal of onboarding process (compared to predecessor programmes) may further reduce uptake
No additional support provided
Content is outdated and fails to reflect the positive messages that contemporary evidence allows
Concerns that the programme may increase health inequalities

* This is due to the major changes made to the programme compared to the predecessor programmes which were the subject of the studies that have been carried out.

† These are all based on studies of the predecessor programmes. None of these factors have been assessed for the version of the programme that has been implemented nationally.

Evidence base

The first significant limitation of NHS Healthy Living, and perhaps the most concerning in relation to whether the national adoption of this programme was justified, is that (despite claims to the contrary) it is not truly based on a programme which has been appraised in a controlled trial[14]. To support this discussion, an overview of how the programme has changed over time is provided in Figure 1.

As introduced previously, NHS Healthy Living is based on the HeLP-Diabetes programme. Although there has been a trial of HeLP-Diabetes[15], this was of the original *unstructured* version of the programme, which participants engaged with in a non-linear fashion (i.e., they did not work through a set programme in a pre-defined order). In 2013, incentives were introduced to encourage general practices in England to refer patients to *structured* diabetes education. In response to this, HeLP-Diabetes was adapted into a structured programme (i.e., participants completed it in a set order). This was a significant change to the nature of the programme. NHS Healthy Living is based on this structured programme, and as such is *not* based on the programme which was assessed in the HeLP-Diabetes trial. Despite this, evidence from the HeLP-Diabetes trial (which, as discussed subsequently, is limited in itself) is still used to support the use of NHS Healthy Living. The appropriateness of this is debatable, particularly as there has been a lack of transparency over the discrepancies between the programme currently being offered to people with diabetes and the programme on which the evidence used to support its use is based.

The structured version of HeLP-Diabetes from which NHS Healthy Living is derived has never been the subject of a controlled trial. It has only ever been appraised in a small "real-world study", which assessed the feasibility, acceptability and impact of the programme in five general practices in London[16]. This assessment found poor uptake and completion rates: of 791 people who registered to

use the programme, only 188 (23.8%) started the programme and just 74 (9.4%) completed it. The number of patients who were invited to engage with the programme but never registered to do so is not reported, thus actual uptake may be significantly lower than the rate reported. Whether NHS Healthy Living can help to address concerns over the take up of diabetes education – one of the primary arguments used to supports its adoption - is therefore debatable. Further, there was no assessment of changes in blood glucose control, or other objective markers of health, in this study. There is therefore no meaningful evidence to support the use of the structured version of the HeLP-Diabetes programme, and the limited evidence that is available suggests that engagement with the programme was poor.

It is also important to note that further changes were made to the programme during national rollout (this is explored in the next section). This creates an even greater gap between NHS Healthy Living and the programme that was the subject of the HeLP-Diabetes trial.

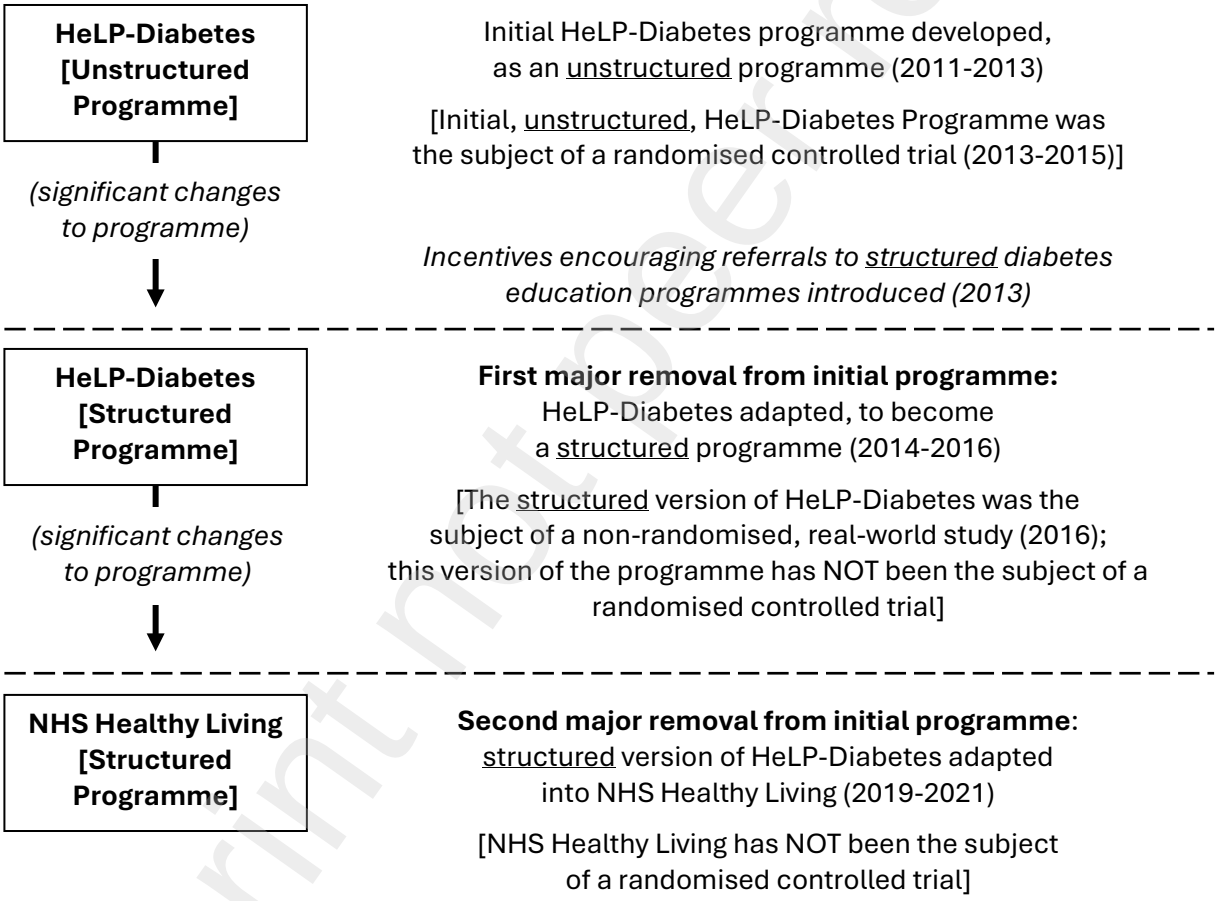

Figure 1. NHS Healthy Living is NOT the programme that was assessed in the HeLP-Diabetes Trial

Programme fidelity

As introduced above, there are significant differences between the NHS Healthy Living programme that is available nationally and the original version of HeLP-Diabetes (see Figure 1). Ultimately, NHS Healthy Living is meaningfully different to *any* version of the programme which has been the subject of a formal study, despite evidence from these studies being used to justify its widespread implementation. Supporting this assertion, a 2022 paper assessing fidelity of NHS Healthy Living to HeLP-Diabetes highlighted significant differences between the programmes[14]. Although it was concluded that NHS Healthy Living had good fidelity to HeLP-Diabetes in relation to the behaviour change techniques used, major alterations were identified, including, but not limited to, the removal of the onboarding and additional support elements. These points are explored further below.

In relation to the first key point of difference noted above – the removal of the onboarding processes – user initiation was facilitated by an introductory training session with a practice nurse in the HeLP-Diabetes trial, to ensure patients knew how to access and navigate the programme. By contrast, this does not occur for NHS Healthy Living. As a result, uptake and engagement (which were already poor for the structured version of HeLP-Diabetes[16]) may be reduced. If these introductory sessions *were* run, to avoid this potential issue, then the costs associated with the delivery of the programme at a local level would no longer be zero and there would be an increased burden on staff within primary care to support this. As a result, some of the key arguments for adoption of NHS Healthy Living would be reduced or removed.

In relation to the second key point of difference – the absence of additional support elements - the HeLP-Diabetes trial included follow-up telephone calls, and participants had access to a moderated forum. No additional support is provided to participants of NHS Healthy Living. This is a significant change, and a major limitation that is likely to negatively impact on the effectiveness of the programme.

Although some adaptations are inevitable to facilitate large-scale implementation of interventions developed through smaller trials, the nature of the differences between NHS Healthy Living and the programme(s) on which it is based (and from which the evidence used to support its implementation is derived) is concerning. It is also of note that the initial implementation plan for NHS Healthy Living, which involved a phased rollout in 10 early engagement areas to develop and test strategies for national deployment, was not able to be carried out due to the onset of the COVID pandemic. Although this was unavoidable, it is likely to have exacerbated some of the issues faced when adapting the programme for widespread use. It may help to explain some of the concerns and confusion that were identified during the appraisal of the initial application of the programme too[10].

Every change and alteration further removes NHS Healthy Living from the evidence base upon which it is founded, and further increases the perception (as explored subsequently) that some of the claims used to promote it are misleading. To the knowledge of the authors, there has been no meaningful assessment of the impact of any of the changes that have been made. Ultimately, the incongruence between the programme(s) from which the evidence base was derived and the programme that has been implemented nationally is problematic, particularly when there is such limited evidence of effectiveness for *any* version of the programme. Despite this, in the absence of any other evidence outcomes from the trial of the unstructured version of the HeLP-Diabetes Programme *are* used in the following sections as a proxy indicator of NHS Healthy Living's possible impact. It is however important that these sections are considered in the context of the limitations that have already been discussed.

Cost-effectiveness

The principal rationale for adopting NHS Healthy Living, at least in areas where the authors have direct experience of commissioners looking to replace existing options with this programme, is unsurprisingly the cost (or lack thereof). It is therefore important to note that the initial economic evaluation of the programme did not provide clear evidence that participation in the programme would reduce spending per patient over time. Attempting to reduce costs by adopting this programme solely because it is free of charge may therefore be a false economy.

Within the initial NHS promotion of the programme, it was claimed that there would be savings of £111 per patient. However, in the analysis this value was derived from the 95% confidence intervals for the estimated savings ranged from a saving of £384 per patient to an increased spend of £136 per patient[17]. As such, it is possible that running the programme could cost the NHS *more* per person than if usual care was provided. This analysis does not therefore provide robust evidence that the programme would lead to savings. Further, these values were taken from an analysis using imputed data. When only data from complete cases were used the mean estimated saving was reduced to £37 per patient, with 95% confidence intervals ranging from a saving of £367 to an increased spend of £282 per patient. Although it can be debated which of these methods is most appropriate, the presentation of the more favourable outcome, without making the nature of the analysis clear or providing the confidence intervals for context, can be considered misleading.

It should be noted that a later analysis *did* conclude that NHS Healthy Living is cost-effective, based on the willingness-to-pay threshold set by NICE per quality-adjusted life year (QALY) gained[18]. There was however significant uncertainty in this outcome, with 95% confidence intervals for the cost per QALY gained ranging from £-203,949 all the way up to £190,267 in the complete case analysis. In addition to this high degree of uncertainty, and as noted by the authors of this analysis, a QALY is not a clinical outcome, and it does not have a straightforward association with outcomes such as HbA1c. As such, these findings should not be considered independently of other evidence pertaining to the effectiveness of the programme.

For comparison, group education has been demonstrated to be highly cost-effective[19,20], likely in part because it allows multiple patients to be given help and support simultaneously. In one independent review, the X-PERT Diabetes programme was found to be the most cost-effective lifestyle intervention[19]. Further, it has previously been estimated that national implementation of X-PERT Diabetes could result in annual savings to the NHS of £367 million[21], a value that would likely be higher today due to improvements in the effectiveness of the programme (as demonstrated by improved outcomes during annual audits) and increases in the costs associated with managing diabetes.

Effectiveness for improving blood glucose control

Although an imperfect marker, HbA1c is the most commonly used indicator of effectiveness for interventions aimed at people with diabetes. In the HeLP-Diabetes trial, the HbA1c reduction was small, with a reduction of just 0.8mmol/mol in the intervention group at 12 months compared to baseline[15]. This is not a clinically meaningful reduction, even though it was promoted as such by the NHS when NHS Healthy Living was launched. Further, the difference between the control group and the intervention group was also small (-2.6 mmol/mol), and was primarily driven by the 1.8 mmol/mol increase in HbA1c in the control group. Accepting such small improvements in blood glucose control is unambitious, at best, at a time where it is increasingly clear that significant improvements in diabetes management, and even remission of type 2 diabetes, are possible.

By comparison, the mean reduction in HbA1c in the most recent annual audit of X-PERT programmes was 8.6mmol/mol at 12 months (95% confidence intervals -8.5 to -8.3mmol/mol; n=2,542)[22], more than 10 times greater than the decrease shown in the programme on which NHS Healthy Living is based. In the original X-PERT clinical trial, HbA1c was reduced by 6.0 mmol/mol at 14 months[23].

Effectiveness for reducing medication requirements

Contemporary evidence has demonstrated that a reduced requirement for medications is a realistic target for many people with type 2 diabetes, with published guidance available to support practitioners in facilitating this in individuals following certain dietary approaches[24]. These reductions in medication needs are because the adoption of suitable lifestyle changes can lead to improvements in the risk factors such medications are intended to address, and thus the need for them is reduced or removed. The prospect of reducing the need for medication is a strong motivator for many people, as it can have a significant impact on physical, mental and social health and wellbeing (including through reducing the risk of side-effects such as hypoglycaemia). Reducing the use of diabetes medications can result in significant savings too: diabetes medications account for approximately 15% of all prescription costs in England, with £1.53 billion spent on drug items prescribed for the treatment of diabetes in 2022/23[3].

To the knowledge of the authors, there has been no evidence presented demonstrating a reduction in medication requirements following attendance of NHS Healthy Living. Indeed, in analyses of the HeLP-Diabetes programme there was actually a small *increase* in the mean cost of medication per user per month[17]. Further, there were no participants at 12 months who were recorded as taking no medication, thus there cannot have been *any* cases of complete omission of diabetes medications (and, as a brief aside, there cannot have been any participants amongst those for whom this data was available who achieved remission of their type 2 diabetes, as continuing to take diabetes medications precludes them being classified as such based on the most widely accepted definition[25]).

Again, NHS Healthy Living's performance in this area does not compare favourably to existing programmes. In the original controlled trial of the X-PERT Diabetes programme, for example, the programme was shown to be effective for reducing diabetes medication (with a "number needed to treat" of seven for this outcome)[23]. Audit data since the trial suggests that the proportion of participants of X-PERT programmes who are able to reduce their medication needs has increased. This is not surprising, based on developments in diabetes care (such as the move towards supporting a broader range of dietary approaches to meet patient needs) and changes in the perspective of how type 2 diabetes is managed (such as increased awareness around the possibility of achieving diabetes remission, and the fact type 2 diabetes need not be a progressive condition, that allow for a more positive approach to be taken). The results from the most recent audit, for example, show that over half of the participants for whom relevant data were available (576/1,144; 50.3%) reduced the amount of diabetes medication they needed by 6 months[22].

Effectiveness for improving other markers of health

The HeLP-Diabetes trial failed to achieve clinically important or statistically significant improvements in systolic blood pressure, diastolic blood pressure, body mass index (which actually showed a mean *increase* in the intervention group), total cholesterol, or HDL-cholesterol[15]. There were therefore no statistically significant improvements in any of the health markers that were measured, beyond the small, non-clinically meaningful decrease in HbA1c noted before. In contrast, in the published 2021

audit of X-PERT Programmes, statistically significant improvements were seen for body weight, body mass index, waist circumference, systolic blood pressure, diastolic blood pressure, Non-HDL cholesterol, triglycerides, total cholesterol to HDL ratio, and triglycerides to HDL ratio[26]. These findings, which are consistent with those observed in other annual audits of X-PERT Programmes, suggest these programmes have a wide range of benefits beyond improved blood glucose control; an assertion that cannot be made for NHS Healthy Living, based on the available evidence.

Effectiveness for improving participant empowerment or self-efficacy

Type 2 diabetes is a condition where individuals are required to manage their own health for long periods of time. It has previously been estimated that, on average, people with diabetes spend just 3 hours *per year* with their care team; leaving them to self-manage their health for the remaining 8,757 hours[27]. The ability of education programmes to help people with diabetes feel more capable and confident with managing their health is therefore exceptionally important. It could even be argued that this is the primary benefit of such programmes, as opposed to more prescriptive interventions which do little to support sustainable self-management. In the HeLP-Diabetes trial, there was not a statistically significant improvement in diabetes self-management efficacy[15]. Conversely, participants of X-PERT programmes consistently exhibit significant improvements in empowerment, as assessed using the validated Diabetes Empowerment Scale-Short Form (DES-SF) questionnaire[28]. This is evidenced by a statistically significant improvement in the X-PERT clinical trial[23] and an increase of approximately 20% consistently observed in annual audits (including in the published 2021 audit results[26] and the most recent audit report[22]).

Effectiveness for reducing diabetes related distress

Promotion of NHS Healthy Living has claimed that attendance of the programme results in a reduction in diabetes related distress. However, in the trial on which the programme is based, the outcome for this metric, as measured using the Problem Areas in Diabetes (PAID) scale[29], was not statistically significant[15]. Support for this claim (i.e., of a reduction in diabetes related distress) instead comes from a smaller, non-randomised trial[30], which should *not* be given more weighting than the clinical trial. It could therefore be argued that results have been cherry picked to support favourable outcomes, particularly as the source of the information was not made clear. Ultimately, the claim that attendance of NHS Healthy Living reduces diabetes related distress can be considered to be misleading. For X-PERT Programmes, there was a statistically significant improvement in the "psychosocial adjustment to diabetes" subscale of the empowerment score utilised in the clinical trial[23].

Nature and tone of content

Over the course of the last decade there has been a significant shift in how type 2 diabetes (and its management) is viewed. As noted previously, this includes important advances in understanding how remission is possible for many[31], and a change in dietary guidance from many major relevant organisations to acknowledge, for example, that one-size-does-not-fit-all and that a range of dietary approaches can be effective[32-35]. These advances are not fairly reflected within NHS Healthy Living, and thus large elements of the programme can be considered to be outdated.

Firstly, the programme does not support the use of individualised and flexible dietary approaches, as is recommended by organisations such as Diabetes UK[33]. Instead, it focuses predominantly on the promotion of a low-fat diet, often through broad, vague allusions to a "balanced and healthy diet", which is largely meaningless terminology that provides no practically useful information to the participant. This does not support patient choice, and so reduces the chance that individuals will be able to adopt an approach that fits their needs and preferences. The ability to do this is essential if they are to be able to maintain any lifestyle changes they make long-term.

Further, although remission is mentioned, the programme predominantly frames type 2 diabetes as a progressive condition. This archaic messaging undermines the messages of patient hope that more contemporary evidence supports. Patient hope, often centred around the prospect of reducing medication needs and/or achieving remission of type 2 diabetes, is a powerful motivator that should be built into the key messages of education programmes and diabetes care more broadly. This is missing from NHS Healthy Living.

Where content *has* been added in line with more contemporary guidance (including brief allusions to remission and dietary approaches beyond a low-fat diet, for example) this is superficial. It has also been done in a way that a creates a contradiction with much of the content of the programme, as other sections have not been updated accordingly. This is more likely to cause confusion than to promote increased feelings of empowerment.

Additional Support

For many people (with or without diabetes) it is unrealistic to expect meaningful and lasting lifestyle changes to be made without additional support. Knowledge, or a lack thereof, is often not the primary barrier to making lifestyle modifications. Effective support helps people to translate knowledge or intentions into actions; it helps motivate them; it helps them to stick to the changes they are trying to implement when challenges arise; and it helps them to make adjustments when things aren't working as intended. Support, whether from peers or healthcare professionals, is a vital component of group programmes. Although it is difficult to replicate this degree of support in digital interventions, support can be built into them in multiple ways, such as through the inclusion of one-to-one health coaching or moderated forums. Where support methods are not incorporated, participants will have to seek it elsewhere. This invariably increases the burden on their healthcare team, which is not something an effective educational intervention should do. The alternative is that they do not receive any additional support at all, which will reduce the chances of them achieving their health goals and increases the likelihood that they will need further medical support downstream.

Based on the above, it is important to note that no additional support is provided to participants of NHS Healthy Living; something noted as a concern by case sites in a recent appraisal of national implementation of the programme[10]. There *were* support elements included as part of the HeLP-Diabetes programme on which NHS Healthy Living is based, but these were not retained when NHS Healthy Living was rolled out nationally[14]. As noted before, this is a significant change that may have a negative impact on the effectiveness of the programme.

Inclusivity and accessibility

For any intervention, particularly those applied nationally, it is important to consider inclusivity, including whether implementation could present a barrier to access for some people. This is

particularly important in relation to groups who may already be subject to health inequalities, due to protected characteristics such as age, race or disability (for example). Concerns over the accessibility of NHS Healthy Living were apparent during a recent appraisal of national implementation of the programme, with there being a perception that the programme was more suited to well educated, native English speakers with a motivation to learn, as well as younger people and people who did not require face-to-face support[10]. As such, it was believed that the programme would not meet the needs of the patients who were most likely to live with type 2 diabetes and/or require additional support. Concerns have also been highlighted that the removal of facilitated access to support the onboarding of participants (which, as noted before, was included for HeLP-Diabetes but not in the national rollout of NHS Healthy Living) may disproportionately affect individuals with lower levels of education[14], exacerbating this issue. In combination, these concerns suggest there is a significant risk that NHS Healthy Living might increase health inequalities.

On this front, it is also noteworthy that none of the sites included in the appraisal of the national rollout of NHS Healthy Living monitored how many people were offered the programme, nor had they received any data from NHS England regarding uptake[10]. This precludes the ability to assess whether concerns over implementation of the programme widening inequalities are accurate. This issue was reported as creating a barrier to future implementation plans too, in relation to how and where recruitment efforts should be targeted, for example.

It *was* noted in the aforementioned appraisal that some areas were grateful that a programme was available which could be offered to all people with diabetes, whereas existing programmes were often only being made available to newly diagnosed patients[10]. This is however an issue related to commissioning decisions and the availability of resources, it is NOT a specific strength of NHS Healthy Living compared to other options, which are often also suitable for those with more established diabetes, even if they are not being made available to them. The X-PERT Diabetes Programme, for example, has been tested in people with newly diagnosed type 2 diabetes and people with established type 2 diabetes, with the results suggesting that it is suitable for all people with type 2 diabetes irrelevant of when they were diagnosed. Indeed, in the most recent audit of programme outcomes, 15% of participants of X-PERT programmes had been diagnosed more than 10 years prior to attending, showing that these programmes are being used beyond people with newly diagnosed diabetes in some areas. If anything, individuals with established type 2 diabetes may be more likely to require the additional support that is missing from NHS Healthy Living, as they are more likely to have comorbidities, complex needs, and/or be experiencing complications. NHS Healthy Living may therefore be less appropriate for these patients than other available options.

Limitations with only offering digital education

Beyond the specific limitations of NHS Healthy Living, which raise questions over whether it meets the needs of people with diabetes and whether its national roll out is justified, there are also limitations to *only* offering a digital education option, despite the potential benefits of this mode of delivery. As highlighted earlier, it is NOT the intention of NHS England that NHS Healthy Living be a replacement for existing educational offerings, but there are valid concerns that in some areas commissioners may be treating it as such, primarily to reduce costs. It is therefore worth appraising the issues that may arise through doing so, which include:

- *A significant risk of reduced uptake of diabetes education* - much as some people will not engage with group-based programmes (e.g., due to social anxiety, negative perceptions related to their diagnosis or stigmas associated with it, or through an aversion to engaging with groups of people), some individuals will not engage with digital ones. One size does not fit all when it comes to engaging with interventions any more than it does when making lifestyle choices, so any education provision that only includes digital modalities is likely to alienate a proportion of the target audience. Providing a menu of options increases the likelihood of any given individual engaging with diabetes education, as it becomes more likely that there will be an option available that they are able to attend/access that they consider to be acceptable.

- *It is discriminatory against people who cannot engage with the technology required to access the programme* – whether due to a lack of access to appropriate equipment, not possessing the skills required to utilise such equipment, and/or disabilities which may limit or remove the ability to engage with this equipment (or digital content more broadly), there are people who are unable to access or effectively engage with educational programmes using computers or other electronic devices. Only offering digital programmes therefore risks exacerbating existing inequalities and denying access to diabetes education to some of those who need it most. Although group programmes can also present barriers to attendance, they are often easier to adapt to meet individual needs than digital interventions are. Again, offering a range of modes of education delivery increases the likelihood that a programme will be available to meet the needs of any given patient.

- *A significant risk of worse patient outcomes* – many individuals will benefit from components that only a group programme can offer, including peer support and an increased opportunity to discuss important concepts, personal experiences, and individualised options with others. When these people are added to those who cannot or will not attend a digital programme, there is an unacceptable risk of worsening care, and so health outcomes, for a significant number of patients if diabetes education is only offered in a digital format. Beyond this, although there is growing evidence that digital education programmes *can* be effective, the quality and depth of this evidence lags behind that which is available for group-based programmes. It would therefore be premature to replace group-based programmes with digital offerings.

- *A failure to meet NICE guidelines* - one of the key NICE criteria for the delivery of structured diabetes education is that programmes should be delivered by appropriately trained educators[4]. This is not possible through digital education, thus NICE guidance cannot be met if this is the only mode of education offered. Further, NICE recommendations state that adults with type 2 diabetes should be offered group education as the *preferred* option, followed by an alternative of "equal standard" if the patient is unable to take part in group education, or prefers not to. Any adaptation to educational offerings that prioritises digital programmes, or replaces group programmes with a digital alternative, will clearly not meet this recommendation either. A meaningful debate could also be had as to whether or not some of the currently available digital programmes (including NHS Healthy Living) constitute an alternative of "equal standard".

Benefits of continuity

As noted previously, in some areas commissioners have attempted to replace existing education programmes with alternatives that are perceived to be cheaper. The benefits associated with experience (e.g., in delivering a particular programme) and continuity should not be underestimated though. Familiarity with programmes and the protocols involved in implementing them allows for services to be delivered more efficiently and effectively than if new procedures need to be established and embedded, and/or if additional training and familiarisation work is necessary. This disruption should be factored into decision making, as should the perspectives of the individuals who are running the relevant services. Perhaps most importantly, feedback (and outcomes) from the individuals utilising them should also be considered. Responses to a recent appraisal of national implementation of NHS Health Living support the assertion that familiarity with existing options may be of benefit. For example, there was significant confusion amongst respondents as to where the programme fits with other programmes and referral pathways, and as to which programmes were suitable for which groups of patients[10].

Continuity should not be mistaken for inertia however, and the maintenance of the *status quo* due to complacency or purely for the sake of simplicity should be discouraged. Rather, it is prudent for service providers to regularly review their offerings to consider where improvements could be made, irrelevant of how long they have offered a particular programme for. But where continual development is present, there is objective evidence of effectiveness, and there is demonstrable evidence of participant engagement and satisfaction, this should support the ongoing delivery of existing programmes; particularly where alternative offerings are unable to provide high quality evidence to suggest they may be a superior option.

Conclusion

Although digital education programmes accessed on an individual basis can have benefits, they should not be considered to provide a complete solution to meet the educational needs of all people with type 2 diabetes. Many of the benefits of group programmes, for which there is a clear and established evidence base demonstrating effectiveness, cannot be replaced through digital offerings. Digital programmes should therefore be offered as part of a menu of options alongside group programmes to help cater to the needs of as wide a range of people as possible. Different modalities of delivery should be considered complimentary, rather than as being in competition with each other.

Whatever programmes are offered, it is important that there is good quality evidence to support their effectiveness. Decisions should not be made purely based on upfront costs, as this is a false economy if longer-term outlay, on medication and the management of complications for example, is increased due to the commissioning of ineffective interventions. Existing programmes, such as those offered by X-PERT Health, do have evidence of effectiveness. The evidence for NHS Healthy Living for People with Diabetes is however severely limited. The programme has *not* been assessed through a clinical trial, and the (indirect) evidence that is available does not suggest that participation in the programme is likely to lead to clinically meaningful improvements in blood glucose control or other markers of health. There are also doubts as to whether the programme is truly cost-effective, and concerns that it is outdated and might increase health inequalities. Questions can therefore be asked as to how and why this programme has become the *de facto* option of choice in England.

Although NHS Healthy Living is free at an NHS provider and patient level, this should not obfuscate the fact the national implementation of the programme constitutes a significant investment of NHS funds.

This money may have been better utilised to support uptake of existing education offerings, digital or otherwise, rather than trying to implement an additional option that has seemingly caused confusion, and which has little evidence to support its widespread use.

References

1. Diabetes UK. How many people in the UK have diabetes? Accessed 19th March, 2025. https://www.diabetes.org.uk/about-us/about-the-charity/our-strategy/statistics?gad_source=1
2. Gregg EW, Hora I, Benoit SR. Resurgence in Diabetes-Related Complications. *JAMA*. May 21 2019;321(19):1867-1868. doi:10.1001/jama.2019.3471
3. NHS Digital. Prescribing for Diabetes in England 2015/16 to 2022/23. Accessed 30/08/2023, https://www.nhsbsa.nhs.uk/statistical-collections/prescribing-diabetes-england/prescribing-diabetes-england-201516-202223
4. National Institute for Health and Care Excellence. Type 2 diabetes in adults: management. Jan 27, 2020. Updated August, 2019. Accessed March, 2020. https://www.nice.org.uk/guidance/ng28
5. Deakin T, McShane CE, Cade JE, Williams RD. Group based training for self-management strategies in people with type 2 diabetes mellitus. *Cochrane Database Syst Rev*. Apr 18 2005;(2):CD003417. doi:10.1002/14651858.CD003417.pub2
6. Steinsbekk A, Rygg LO, Lisulo M, Rise MB, Fretheim A. Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis. *BMC Health Serv Res*. Jul 23 2012;12:213. doi:10.1186/1472-6963-12-213
7. Chrvala CA, Sherr D, Lipman RD. Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. *Patient Educ Couns*. Jun 2016;99(6):926-43. doi:10.1016/j.pec.2015.11.003
8. Odgers-Jewell K, Ball LE, Kelly JT, Isenring EA, Reidlinger DP, Thomas R. Effectiveness of group-based self-management education for individuals with Type 2 diabetes: a systematic review with meta-analyses and meta-regression. *Diabetic Medicine*. 2017;34(8):1027-1039. doi:10.1111/dme.13340
9. Chatterjee S, Davies MJ, Heller S, Speight J, Snoek FJ, Khunti K. Diabetes structured self-management education programmes: a narrative review and current innovations. *The lancet Diabetes & endocrinology*. Feb 2018;6(2):130-142. doi:10.1016/S2213-8587(17)30239-5
10. Brunton L, Cotterill S, Wilson P. Evaluating the National Rollout of a Type 2 Diabetes Self-Management Intervention: Qualitative Interview Study With Local National Health Service Leads Responsible for Implementation. *J Med Internet Res*. Sep 25 2024;26:e55546. doi:10.2196/55546
11. Kebede MM, Zeeb H, Peters M, Heise TL, Pischke CR. Effectiveness of Digital Interventions for Improving Glycemic Control in Persons with Poorly Controlled Type 2 Diabetes: A Systematic Review, Meta-analysis, and Meta-regression Analysis. *Diabetes technology & therapeutics*. 2018;20(11):767-782. doi:10.1089/dia.2018.0216
12. Offringa R, Sheng T, Parks L, Clements M, Kerr D, Greenfield MS. Digital Diabetes Management Application Improves Glycemic Outcomes in People With Type 1 and Type 2 Diabetes. *Journal of diabetes science and technology*. May 2018;12(3):701-708. doi:10.1177/1932296817747291
13. He Q, Zhao X, Wang Y, Xie Q, Cheng L. Effectiveness of smartphone application-based self-management interventions in patients with type 2 diabetes: A systematic review and meta-analysis of randomized controlled trials. *J Adv Nurs*. Feb 2022;78(2):348-362. doi:10.1111/jan.14993
14. Benton JS, Cotterill S, Hawkes RE, Miles LM, French DP. Changes in a Digital Type 2 Diabetes Self-management Intervention During National Rollout: Mixed Methods Study of Fidelity. *J Med Internet Res*. Dec 7 2022;24(12):e39483. doi:10.2196/39483
15. Murray E, Sweeting M, Dack C, et al. Web-based self-management support for people with type 2 diabetes (HeLP-Diabetes): randomised controlled trial in English primary care. *BMJ Open*. Sep 27 2017;7(9):e016009. doi:10.1136/bmjopen-2017-016009

16. Poduval S, Marston L, Hamilton F, Stevenson F, Murray E. Feasibility, Acceptability, and Impact of a Web-Based Structured Education Program for Type 2 Diabetes: Real-World Study. *JMIR Diabetes*. Jan 6 2020;5(1):e15744. doi:10.2196/15744
17. Murray E, Ross J, Pal K, et al. A web-based self-management programme for people with type 2 diabetes: the HeLP-Diabetes research programme including RCT. *Programme Grants for Applied Research*. 2018;6:5. doi:10.3310/pgfar06050
18. Li J, Parrott S, Sweeting M, et al. Cost-Effectiveness of Facilitated Access to a Self-Management Website, Compared to Usual Care, for Patients With Type 2 Diabetes (HeLP-Diabetes): Randomized Controlled Trial. *J Med Internet Res*. Jun 8 2018;20(6):e201. doi:10.2196/jmir.9256
19. Jacobs-van der Bruggen MAM, van Baal PH, Hoogenveen RT, et al. Cost-Effectiveness of Lifestyle Modification in Diabetic Patients. *Diabetes Care*. 2009;32(8):1453-1458. doi:10.2337/dc09-0363
20. Teljeur C, Moran PS, Walshe S, et al. Economic evaluation of chronic disease self-management for people with diabetes: a systematic review. *Diabetic Medicine*. 2017;34(8):1040-1049. doi:10.1111/dme.13281
21. Deakin T. The diabetes pandemic: is structured education the solution or an unnecessary expense? *Practical Diabetes*. 2011;28(8):358-361. doi:10.1002/pdi.1635
22. X-PERT Health. *X-PERT Health 2024 Audit Report*. 2024. https://www.xperthealth.org.uk/wp-content/uploads/2024/12/XD-Audit-Report-2024-Final-1.pdf
23. Deakin TA, Cade JE, Williams R, Greenwood DC. Structured patient education: the diabetes X-PERT Programme makes a difference. *Diabet Med*. Sep 2006;23(9):944-54. doi:10.1111/j.1464-5491.2006.01906.x
24. Murdoch C, Unwin D, Cavan D, Cucuzzella M, Patel M. Adapting diabetes medication for low carbohydrate management of type 2 diabetes: a practical guide. *British Journal of General Practice*. 2019;69(684):360-361. doi:10.3399/bjgp19X704525
25. Riddle MC, Cefalu WT, Evans PH, et al. Consensus Report: Definition and Interpretation of Remission in Type 2 Diabetes. *Diabetes Care*. 2021;44(10):2438-2444. doi:10.2337/dci21-0034
26. Wheatley SD, Arjomandkhah NC, Murdoch C, et al. Improved blood glucose control, cardiovascular health and empowerment in people attending X-PERT structured education. *Practical Diabetes*. 2021;38(6):31-35. doi:10.1002/pdi.2368
27. Whicher CA, O'Neill S, Holt RIG. Diabetes UK Position Statements. Diabetes in the UK: 2019. *Diabetic Medicine*. 2020;37(2):242-247. doi:10.1111/dme.14225
28. Anderson RM, Fitzgerald JT, Gruppen LD, Funnell MM, Oh MS. The Diabetes Empowerment Scale-Short Form (DES-SF). *Diabetes Care*. May 2003;26(5):1641-2. doi:10.2337/diacare.26.5.1641-a
29. Polonsky WH, Anderson BJ, Lohrer PA, et al. Assessment of Diabetes-Related Distress. *Diabetes Care*. 1995;18(6):754-760. doi:10.2337/diacare.18.6.754
30. Hofmann M, Dack C, Barker C, Murray E. The Impact of an Internet-Based Self-Management Intervention (HeLP-Diabetes) on the Psychological Well-Being of Adults with Type 2 Diabetes: A Mixed-Method Cohort Study. *J Diabetes Res*. 2016;2016:1476384. doi:10.1155/2016/1476384
31. Brown A, McArdle P, Taplin J, et al. Dietary strategies for remission of type 2 diabetes: A narrative review. *J Hum Nutr Diet*. Feb 2022;35(1):165-178. doi:10.1111/jhn.12938
32. Scottish Intercollegiate Guidelines Network. *Management of diabetes: A national clinical guideline*. 2010. https://www.sign.ac.uk/assets/sign116.pdf
33. Dyson PA, Twenefour D, Breen C, et al. Diabetes UK evidence-based nutrition guidelines for the prevention and management of diabetes. *Diabet Med*. May 2018;35(5):541-547. doi:10.1111/dme.13603
34. American Diabetes Association Professional Practice C, American Diabetes Association Professional Practice C, Draznin B, et al. 5. Facilitating Behavior Change and Well-being to Improve Health Outcomes: Standards of Medical Care in Diabetes-2022. *Diabetes Care*. Jan 1 2022;45(Supplement_1):S60-S82. doi:10.2337/dc22-S005
35. Davies MJ, Aroda VR, Collins BS, et al. Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetes Care*. Nov 1 2022;45(11):2753-2786. doi:10.2337/dci22-0034