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Making digital materials accessible: the Person-Based Approach

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Routes to digital health inequality

Users with less education/income may:

- Lack access to digital services
- Lack motivation to access digital services
- Find digital materials difficult to engage with

Solution:

Targeting/tailoring vs. accessible design

The Person-Based Approach to design

- Approach evolved as learning process developing over 20 interventions for public health and illness management
- Based on >1000 qualitative interviews with users, plus evidence from trials of our intervention effectiveness

JOURNAL OF MEDICAL INTERNET RESEARCH

Yardley et al

Original Paper

The Person-Based Approach to Intervention Development:
Application to Digital Health-Related Behavior Change
Interventions

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Overview of the Person-Based Approach

Aim: to understand and accommodate the perspectives of the people who will use the intervention, in order to improve acceptability, feasibility, engagement (hence uptake, adherence and outcomes)

Methods:

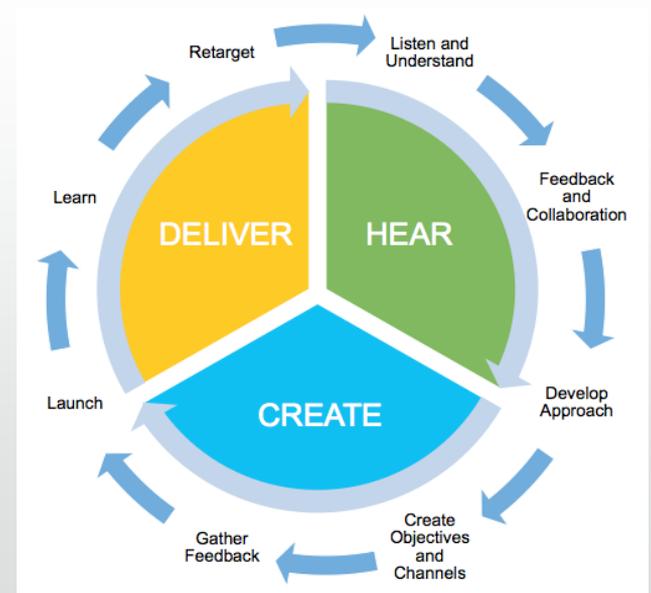
- extensive, in-depth qualitative and mixed methods research throughout planning, development, implementation
- involve **wide range of people from target user populations**

Complements theory-based intervention development by

- suggesting **which** behaviour change techniques most important in a particular context
- providing guidance on **how best to implement them**

Related and complementary approaches

- Patient-centred and personalised medicine
- Usability/satisfaction testing
- User-centred design
- Participatory design



Evidence base: PRIMIT

- WHO/DoH advises hand-washing to prevent spread of infection (e.g. pandemic) – but actually no good evidence it is effective, no interventions to support advice
- Developed brief intervention to increase hand-washing, trialled in > 20,000 adults
- Reduced respiratory and gastrointestinal infections (frequency, severity, antibiotics, consultations), in users and household members, (Lancet, 2015), **effect size same for all levels of deprivation**
- To be disseminated as NICE accredited resource



Illustrating the person-based approach: the development of POWeR

POWeR+

(trial published Lancet Diabetes & Endocrinology 2016)___

- a) Weekly goal and weight review with tailored feedback
- b) Advice sessions – 4 stages, total of 25 sessions

Trial findings

POWeR is accessible and cost-effective, engagement can be sustained by very modest human support (around 3 phone calls/emails plus 6 monthly weighing)



Your personal healthy eating and physical activity plan

Congratulations!

You have achieved your goals. Keep up the good work.

On the next page you can look at the goals you set last time.



Your personal healthy eating and physical activity plan

You haven't met your goals this week

That's OK. You still managed to lose weight

On the next page you can look at the goals you set last time.

You may wish to change the goals that you have not achieved before setting yourself some new goals. You will be able to look over these goals with your nurse at your next appointment, or you can change them now if you want to.



POWeR key design objective: to promote **long-term adherence** and **maintenance** of weight loss

Key features that can achieve this aim

- Emphasis on building **autonomous motivation**, e.g. non-prescriptive approach, avoid feelings of ‘deprivation’ (no forbidden foods, choice of eating plans and goals)
- Focus on creating lifestyle-compatible long-term **habits** (simple eating goals, less reliance on calorie counting, food diary)

How often did you reach your goals?

These are the goals you set last week:

	Every day	Most Days	Some Days	No Days
I will cut down on take aways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will reduce my portion size for my evening meal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will stop snacking on chocolate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Person-based intervention development

Inductive qualitative research essential to gain insight into whether all intervention components

- a) comprehensible, acceptable, feasible
 - b) easy to use, motivating, enjoyable, informative, convincing
1. Think aloud studies to elicit range of target users' reactions to every element of the intervention!
 2. Allow users to try intervention for a few weeks, keep diaries -- retrospective interviews about experiences

Example: Qualitative study of experiences of the prototype POWeR intervention

Think aloud interviews with 16 people (8 women) aged 18 to >65 using first session of POWeR:

- introduced users to the POWeR philosophy
- allowed them to choose low-calorie or low-carbohydrate eating plan
- helped them to set weekly goals and make ‘if-then’ plans

Setting Your Goals

Now you have thought about your 24 hour food diary you can **decide what your goals will be**. The nurse will discuss these with you when you meet, after you have had a chance to put them into practice and **see if they are right for you**.

You can set your own goals below:

1.

Example Goal Plan

- I will grill fish instead of frying it.
- I will reduce my portion sizes, by using smaller plates.

Key findings influencing intervention modification

Perceptions of choice of eating plan

Positive aspects

“The fact that there’s a choice immediately is attractive cause I can go for either or.”

“I like that it’s a long term plan that you can stick to, rather than a really strict regime that as soon as you stop, it comes back on.”

“I find a low calorie too restricting because you end up with having to count or seeming to count everything.”

“So it’s almost saying, you know, not everything is banned, it’s just some are going to be the more occasional ones. So it makes you feel like you’re not going to give anything up.”

Key findings influencing intervention modification

Goal setting

Concerns

“Ok, so ‘eat as much as you like’ [of low carbohydrate foods] doesn’t – I’m not sure if it will help me lose weight or not”

“It would be useful for me to know what my daily calorie allowance would be.”

“What is easier about those [other] kind of programmes, is that you don’t have any choices to make, you know, you can’t say, oh, ‘should I have a lettuce leaf or should I have a peanut?’ You just eat the packet of soup or whatever. So actually it makes it extremely easy to lose weight.”

Key findings influencing intervention modification

Perceptions of choice of goal setting (*positive and negative*)

“You think, oh, OK, I’ll just have to do that small goal, I don’t have to change my whole eating habit, it’s just small bits.”

“And for me, having a plan with reasonable goals is really important. Because I don’t know if I am a typical man but I set myself too higher goals too often and fail.”

“I wouldn’t know what to write at this point, you know ... I’m not sure the information that was there helped me to find out what mine would be.”

“It’s very easy to say I’ll reduce my portion size here but one of my goals isn’t to stop snacking so I can just snack as much as I like.”

Intervention modifications

Expanded rationale for 'healthy habit' vs. 'diet' approach

Made calorie counting available for those who really want or need it (e.g. for use as diagnostic aid if not losing weight)

Provided drop-down menu of simple goal-setting options likely to result in weight loss (e.g. reduced portion size, swapping all unhealthy snacks or high calorie drinks)

POWeR is not a diet it's a healthy eating plan!

POWeR takes a different approach.

It helps you to develop healthy habits which allow you to be in charge of your own weight loss and what you eat. There is a simple rule that can help you to do this:

The test of whether you have done enough to lose weight will be when you weigh yourself each week. If you have eaten the right amount then you will have lost weight. If you have eaten too much then you won't have lost weight and you can eat less the following week to help you to lose weight.

Important evidence suggests that checking whether you are eating the right amount by weighing yourself is a very helpful way to keep your weight off.



One piece of research compared 12 different studies that looked at how weighing can help people lose weight.

Eleven of these studies found that people who weighed themselves at least once a week lost more weight than those who didn't. On average people who weighed themselves lost around 12-18 pounds (5.4-8.1 kg).

Illustrating the person-based approach: the Diabetes Literacy website



Diabetes Literacy

EC-funded study to examine whether digital interactivity and graphics can improve health literacy outcomes - asked:

- Can we design interactive digital materials that people with low health literacy find engaging?
- Can these materials improve health literacy?
- Will these materials also be engaging for people with higher levels of health literacy?

Website evaluated by qualitative research and/or trial in UK, USA, Ireland, Germany, Austria (plus Taiwan)

Interactive features

- tailoring the material to the user (e.g. attitudes, age)
- audio-visual presentation formats
- quizzes
- tools to support self-management tasks (e.g. guidance for planning lifestyle changes)



Bleib gesund mit Diabetes

Willkommen!

Willkommen auf der "Bleib gesund mit Diabetes"-Webseite!

Hier erhalten Sie interessante und nützliche Ergebnisse medizinischer Studien, die zeigen, **wie man auch mit Diabetes gesund bleiben kann**. Wir wollen die Webseite testen um herauszufinden, wie man Menschen am besten über Diabetes informieren kann. Wenn Sie an der Studie teilnehmen möchten, klicken Sie bitte auf „**Ich möchte teilnehmen**“ am Ende der Webseite.



Was passiert, wenn ich an der Studie teilnehme?



保持健康與糖尿病

歡迎！

歡迎來到糖尿病健康樂活網站！

此網站將解釋許多與糖尿病患者保持健康有關的有趣實用醫學研究。

此網站正在測試給予糖尿病患者建議時的最好方式。

如果您想要參加此計劃，請按「我想參加」。



如果我參加，將會發生甚麼事？

認識團隊



Healthy living with diabetes

Welcome!

Welcome to the Staying Healthy with Diabetes website!

This website will explain some interesting and useful findings from medical studies about how to **stay healthy with diabetes**.

This website is being tested to find out what is the best way to give people advice about diabetes. If you want to take part in the study **just click on 'I want to take part'** at the bottom of the page.



What will happen if I take part in the study?

- You **do not need to give your name** or contact details
- We will ask you some brief questions about yourself.
- You will then be able to see the website
- After you have looked at the advice we will ask a few more questions to find out what you feel about it

[Click here](#) if you want to **READ more details** about the study

[Click here](#) if you want to **HEAR more details** about the study

Meet the team

[Click here](#) to meet the **team of health experts** who created this website!

I want to take part



Healthy living with diabetes

Question 3

Physical activity can help you feel more energetic and less tired.

True False

[Skip quiz section](#)

[Click here for the answer](#)



Healthy living with diabetes

Well done!

Well done, you are quite right.

Studies have shown that being physically active can make you feel less tired!

How can physical activity help people with diabetes feel less tired?

People with diabetes sometimes feel more tired because of having either high or low blood sugar levels.

Being more active helps keep your blood sugar level steady, and this makes you feel less tired.

Many scientific studies have also shown that **being more active can help you sleep better and have more energy.**



[Click here for the next question](#)



Healthy living with diabetes

Question 9

Physical activity can improve your sex life.

True False

[Skip quiz section](#)

[Click here for the answer](#)



Healthy living with diabetes

Well done!

You're quite right, physical activity **CAN** improve your sex life.

The bad news

More than half of men with diabetes have problems getting, or keeping an erection. This is because high blood sugar levels can damage the blood flow in your penis.

The good news

Physical activity can help because it improves your blood flow. It can also lower the chances of more damage to the blood flow in your penis by helping to control blood sugar levels.



Next



Healthy living with diabetes

Physical activity

Is doing more physical activity right for YOU?

Now you have seen how good physical activity can be for people with diabetes, would you like some **brief tips** for **easy ways** to fit a little more into your lifestyle?

If you let us know how you feel about doing physical activity we can pick the **right tips for you**.

	Strongly Agree	Agree	Disagree	Strongly Disagree
I don't like exercising	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't have time the time or money to exercise	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have health problems that stop me being more active	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
I already do enough physical activity	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

[No thanks, skip tips](#)

[Get personal tips](#)



Healthy living with diabetes

Personal tips

Lots of people find exercise **too boring, grim or sweaty** - or just not something that feels right for them. Many people **don't have time** to exercise, or **can't afford** to join a club or buy exercise kit. Some people also worry that exercising could be risky or painful because of their health problems.

The good news: You **don't have to do ANY exercise** to get enough physical activity in your life to be healthy. Many studies have shown that **moving just a little bit more every day** can make a huge difference to your health.

Most people can do this kind of activity safely – in fact **being a little more active will help with most other health problems**. But if you are not sure if it is OK for you to be more active then you can click on the questions below to find out more.

[Do I need to see a doctor if I want to do more physical activity?](#)

[Will physical activity make my back or joint pain worse?](#)

[Can I do physical activity if I have breathing problems?](#)



Next



Healthy living with diabetes

What can I do to be more active?

Any type of activity that makes your heart beat a bit faster can make a difference to your health – this can be walking, housework, gardening.

Even taking the stairs whenever you get a chance can help build up fitness.

Did you know?

New studies have shown that if you sit down for a long time (e.g. on the computer, driving or watching TV) **it is good for your health to fit in activity breaks** when you can. For example, you could walk around while on the phone, or do some gentle physical activity while watching TV.

Click on the black box to watch this **short video** about what activities other people like to do. If you don't have speakers, or prefer to read the story [click here](#).



The last few pages of this website will help you think of activities that suit you and your lifestyle. Click next for ways you can get the most benefit out of the activity you already do.

Next



Healthy living with diabetes

How can I fit a bit more activity into my life?

Thinking about the **physical activity you already do** is the best way to plan how you can fit a little more into your lifestyle.

Just tell us **how often you do some activities in an average week** – then we can help you get the most benefit out of them.

On how many days a week do you do this activity?

Only record activities that make you feel a bit warmer and breathe a bit harder than normal.

DAYS

Walking (only count fast walking for at least 10 minutes non-stop)

Heavy housework (makes your heart beat faster) , **DIY or gardening**

Fun physical activities (e.g. dancing, sports)

Cycling

Other activity of any kind (e.g. exercises, swimming, gym)

Very gentle activities such as walking slowly or washing the dishes do not count!

Next



Healthy living with diabetes

How active are you?

You are not very active just now, and so **you will get more health payback than other people from even a little extra activity.**

If you can gently build up to an hour a week (just 10 minutes most days) this will make a real difference to your health.

The next page will help you plan how to do this.

Finish

Next

My physical activity plan

<i>Type of activity :</i>	<i>Times a week:</i>	<i>Minutes each time:</i>
Walking	1 times	45 minutes
Housework or gardening	2 times	90 minutes
Cycling	2 times	90 minutes
Other activities	3 times	120 minutes

No, go back

Are you happy with this plan?

[Click here to print your plan](#)

Yes!

Findings from interviews

Participants generally liked the website and the interactive features

Findings similar for all levels of health literacy and all countries (also few differences due to age, gender, time since diagnosis)

Interviews identified important modifications for improving engagement (e.g. tailored feedback from planner)

Healthy living with diabetes

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Trial of health literacy outcomes

Journal of Medical Internet Research, 2016)

- 1045 people took part from UK, Ireland, Austria, Germany and Taiwan
- Completed short questionnaire before and after viewing website (assessed knowledge, attitudes, confidence)
- Compared two versions of website:
 - Static written materials vs.
 - Interactive and audiovisual materials

Summary of results

All users' health literacy outcomes improved after viewing the website (both versions, all countries, all health literacy levels) - increased:

- Knowledge about how physical activity can improve health in people with diabetes
- Belief that physical activity has health benefits for people with diabetes
- Confidence and intention to undertake physical activity
- Sense of 'enablement' – understanding of diabetes and how to self-manage it

Conclusions

- Digital materials can be designed to improve health literacy and support self-management in people with all levels of health literacy, without increasing health inequalities
- Good design (person-based approach) may be sufficient - interactivity and audio-visual presentation may not be necessary
- Both these findings can potentially reduce the costs of developing accessible materials
- In future, well-designed digital communication materials can provide a cost-effective means of filling unmet need for self-management support for self-management of health

Reading

Person-Based Approach

<https://www.jmir.org/2015/1/e30/>

POWeR weight management trial

[http://thelancet.com/journals/landia/article/PIIS2213-8587\(16\)30099-7/abstract](http://thelancet.com/journals/landia/article/PIIS2213-8587(16)30099-7/abstract)

PRIMIT infection transmission trial

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)60127-1/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)60127-1/abstract)

Diabetes Literacy trial

<https://www.jmir.org/2017/1/e21/>