REPRESENTATIONS OF TYPE 2 DIABETES AND ACTIVE TRAVEL IN PATIENTS WITH TYPE 2 DIABETES (T2D):

A PROSPECTIVE QUALITATIVE STUDY

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Active travel / E-cycling

• E-bikes offer graded assistance - may help to overcome perceived barriers (e.g. hilly routes, distance, concerns surrounding the physical effort required to cycle).

• E-cycling is less intense than conventional cycling - but 95% of E-cycling time classified as Moderate to Vigorous Physical Activity (MVPA; Berntsen et al, 2017).

• E-cycling could work within people’s daily lives offers and could have the potential to increase MVPA (Gojanovic et al, 2011; Berntsen et al, 2017).

• Evidence of utility of E-bikes to improve health and fitness in free-living populations is lacking.
E-Cycle Feasibility Study

PEDAL: Promoting Electrically-assisted cycling in people with type 2 Diabetes:

Acceptability and feasibility

Participants were issued an electric cycle for their sole use during the 20-week intervention. Participants also received 1:1 training from a qualified instructor from:

Participants also completed a submaximal fitness test at baseline and follow up and wore a heart rate monitor and a GPS receiver to quantify the heart rate response to E-cycling.
Method

Prospective qualitative study:

In-depth interviews were conducted with 19 individuals with type 2 diabetes (42-70 years, 11 Male, 8 Female) commencing participation in the 20 week active travel E-cycling intervention.

Participants were predominantly older adults (n=12 >55years; range 42.8-70.3), overweight or obese, White (n=17) and 50% full-time employment.

Post intervention interviews were conducted with 17 participants. Interviews were transcribed verbatim and inductive thematic analysis was undertaken by AS and JZ. Five key themes emerged:

1. Lifestyle and personal circumstances
2. Attitudes towards physical activity
3. Health perceptions and management of Type 2 Diabetes
4. Mode of travel and attitudes towards cycling
5. Post-intervention health status (Follow-up)
Representations of T2D

A theoretical approach to understanding the uptake and engagement in active travel is the Common Sense Model (CSM) of illness behaviour.

According to the CSM a patient is an active participant in the health care process (Weinman & Petrie, 1997; Leventhal et al, 1984).

Individuals experiencing illness make sense of their illness by creating their own ‘models’ or representations of their illness which then influence their coping and care-seeking.

Secondary deductive thematic analysis was also undertaken to determine participants’ representations of diabetes and explore their relationship with engagement with E-cycling:

Representations such as perceived cause, consequences, personal control and treatment control of T2D were utilised as a framework for understanding participants’ engagement with the E-cycling intervention.
Cause and Consequences of T2D

Participants recognised lifestyle as a leading cause for the onset of T2D.

*Probably, like I said, there is no history in my side, but then my own lifestyle, has probably contributed a lot to. Food-wise. I don't eat like I should. I know what I've got to do...* (101, Female, 58 years, Time 1)

Participants acknowledged that physical activity, in the form of E-cycling, could help reduce the consequences of T2D.

*I think if I don’t do it now (physical activity) then I’ll suffer the consequences later I hear horror stories about diabetes and what it can do to the body. So, I think if I don’t do it now and strike while the iron’s hot then I’m just asking for trouble later.* (102, Female, 58 years, Time 1)
Control of T2D

Engagement in the E-cycling intervention appeared to reinforce perceptions of personal control over treatment control.

Thus some participants self-regulated their dietary behaviour in response to their level of engagement with E-cycling with a view to reducing their medication for T2D.

*I think the electric bike’s down to starting exercise, and the benefits of exercise relating to the diabetes. And there has been an improvement in the diabetes. Six-monthly review was fine. But actually, sort of, the average blood sugar level was back down below the trigger point for the diabetes. The weight is coming off. I’ve lost another stone in the process of doing this. Bearing in mind that I haven’t changed anything else. (118, Male, 52 years, Follow-up)*
Implications

Engagement in E-cycling intervention may be viewed as a behavioural coping strategy for individuals with T2D

A means of fostering *personal control* with regard to self-management and may serve to reduce *treatment control* beliefs individuals with T2D.

Illness representations have the potential to change through intervention. For example, interventions have successfully modified heart attack patients illness and treatment perceptions which has subsequently improved outcomes (Broadbent, 2009; Petrie, et al, 2002).

Interventions aimed at supporting resilience and encouraging self-management strategies can help to maintain behavioural coping and psychological well-being and in turn may help to restore a sense of *personal control* (Velissaris et al, 2007).
Conclusion and Current Work

Individuals with T2D considered E-cycling to be a viable health intervention, and this is further supported by 14 participants buying their E-bike post-intervention.

E-cycling is a form of active travel that may be incorporated into everyday life, replacing car journeys, and which may be sustainable.

E-cycling has potential as a health-improving intervention in people with T2DM.

Current PhD programme:
• An experimental study examining the impact of e-biking on postprandial glucose regulation and 24hour glucose regulation (compared to a day of sedentary activity)

• PEDAL 2 – a pilot randomized feasibility trial compared three months of e-biking to no e-biking in individuals with T2D