Factors affecting uptake of an education and physical activity programme for newly diagnosed type 2 diabetes

S Visram, AS Bremner, BE Harrington, G Hawthorne*

Abstract

Background: Intensive lifestyle intervention involving weight reduction and moderate physical activity has been shown to help regulate, and even prevent, type 2 diabetes.
Aim: This study sought to explore factors affecting uptake of an education and physical activity programme for those diagnosed with type 2 diabetes.
Method: Focus group discussions were conducted with individuals who completed the programme and semi-structured interviews were conducted with those who declined the invitation to attend. Data were analysed using a thematic framework approach and key similarities and differences between the groups were identified.
Results: The 11 programme participants studied appeared to have received clearer messages about the severity of unmanaged diabetes, whereas the 10 non-attenders studied felt that co-morbidities posed greater risks to their health. There were major concerns among both groups about undertaking exercise, and strategies for diabetes management focused heavily on dietary modification.
Conclusion: The findings of this study suggest that fears and lack of understanding about both diabetes and exercise can act as barriers to engaging in physical activity. These findings are supported by the literature and highlight the need for more tailored programmes of lifestyle intervention for those with type 2 diabetes.

Eur Diabetes Nursing 2008; 5(1): 17–22

Key Words

Type 2 diabetes; education; physical activity; patient experiences; self-management; lifestyle

Introduction

People diagnosed with type 2 diabetes need education to understand and accept their condition, and manage it successfully.[1] The importance of structured diabetes education is set out in the Diabetes National Service Framework and reinforced by guidance from the National Institute for Health and Clinical Excellence on the use of patient education models for diabetes.[2,3] Although education programmes can impart information on the importance of exercise and lifestyle intervention for glycaemic control, the implementation of these changes is left to the individual. Dietary intake and exercise levels remain worryingly poor among people with type 2 diabetes, the majority of whom do not engage in the recommended levels of physical activity and tend to be overweight.[4]

A number of studies have demonstrated improvements in glycosylated haemoglobin (HbA_{1c}) values and body mass index (BMI) using educational approaches.[5–12] However, educational programmes alone have had little long-term effect on increasing physical activity levels among people with type 2 diabetes.[10–13] This is in contrast to evidence which shows that regular, moderate-intensity activity can produce small but significant improvements in blood-glucose control.[14] In those with impaired glucose tolerance, intensive lifestyle intervention involving weight reduction and moderate activity can actually prevent the onset of type 2 diabetes.[15] Exercise programmes can help to reduce HbA_{1c} levels and increase physical activity among participants.[16–19] Both aerobic and resistance exercise programmes produce similar benefits, although physical activity

Authors

S Visram, BA Hons, MPH, Postgraduate Research Associate, Community, Health and Education Studies Research Centre, Northumbria University, Newcastle-upon-Tyne, England

AS Bremner, BSc Hons, MSc, Senior Community Dietitian, Newcastle Nutrition, Royal Victoria Infirmary, Newcastle-upon-Tyne, England

BE Harrington, BA Hons, MSc, MA, Research Fellow, School of Applied Sciences, Durham University, Durham, England

G Hawthorne, FRCP, PhD, Community Diabetologist, Newcastle Diabetes Service, Newcastle General Hospital, Newcastle-upon-Tyne, England

***Correspondence to:**
S Visram, H011, Coach Lane Campus East, Northumbria University, Newcastle-upon-Tyne, NE7 7XA, England
e-mail:
shelina.visram@northumbria.ac.uk

Received: 28 September 2007
Accepted in revised form:
20 December 2007

Characteristic	Programme participants (n=11)	Non-attenders (n=10*)
Mean age in years (range)	63 (30–83)	63 (42–87)
Male : female ratio	7 : 4	3 : 7
Employment status:		
Employed	3	2
Retired	6	Unknown
Permanently sick/disabled	2	Unknown
Socioeconomic status**:		
Affluent	Unknown	5
Disadvantaged	Unknown	5

*1 Data from two non-attenders in the original study sample were not considered in the analysis, for reasons explained in the text.
** Inferred from location of residence with regards to Index of Multiple Deprivation.

Table 1. Characteristics of interview and focus group participants

which incorporates higher levels of intensity results in greater improvements.[14]

In Newcastle-upon-Tyne, England, all patients with Type 2 diabetes are referred by their general practitioner (GP) to specialist dietetic services within four weeks of diagnosis. The dietitian invites them to participate in an education and physical activity programme, which is run by Diabetes Nurse Specialists in one of six leisure centres strategically located across Newcastle. Each session of the eight-week course is two hours long and includes a 45-minute talk on an aspect of diabetes management, followed by one hour of supervised exercise. Around 20 courses run each year, involving 10–12 participants per course, and approximately 50% of those referred take up the offer to attend.

We report here the results of a study that represents the qualitative strand of an evaluation of the Newcastle Education and Physical Activity Programme for Newly Diagnosed Type 2 Diabetes. The principal aims of this study were to explore experiences, views and perceptions of the programme among service users, and to identify strategies to remove potential barriers to attendance and increase access to the programme. The study involved focus groups with programme participants, and semi-structured interviews with those who declined to attend.

Methods

Design

This study utilised a nested qualitative design, which allowed participants to describe their experiences in their own words. The intention was to complement and illuminate the quantitative results from the wider service evaluation, the results of which are reported elsewhere.

Participants

Over a four-month period, all referrals to the programme were asked if they would like to take part in an evaluation. Programme participants were purposively sampled to ensure representation from each of the six courses running at leisure centres across Newcastle. Recruitment took place via the Diabetes Nurse Specialists at the first session of the course.

The Diabetes Nurse Specialists identified those who had agreed to take part in the evaluation but who subsequently failed to attend the programme. These individuals were contacted by letter from their GP on practice-headed notepaper (a method known increase response rates among hard-to-reach groups).[20] A purposive sampling strategy was used to select 12 non-attenders, taking into account age, gender and socioeconomic status.

Data collection

The focus group method was felt to be most appropriate in gathering the views of programme participants as it explicitly uses group interaction to produce data and insights.[21] Two separate groups were held in venues used to deliver the programme. Individual interviews were felt to be more suitable for gathering the views of non-attenders, as the group format was potentially a factor in their decision not to attend the programme. The interviews lasted for roughly one hour and took place at a mutually convenient venue.

Topic guides were created with input from the Diabetes Nurse Specialists, after reviewing the research literature and initial evaluation findings. Principal content areas included access to the service, format and content of the sessions, and perceived impact of the programme. Participants were also specifically asked about their perceptions of exercise, after the quantitative strand of the evaluation revealed consistently poor levels of self-reported physical activity. The interview guide for non-attenders included probes about their medical background, quality-of-life, knowledge of diabetes and

reasons for non-attendance.

Analysis

Trustworthiness of data interpretation was addressed by having three members of the research team independently analyse the notes and transcripts, i.e. triangulation of analysis.[22] A thematic content/framework approach was used, whereby each phrase is examined, coded according to the themes within it and considered in terms of its context in the discussion.[23,24] Categories identified in this way were grouped to form themes that reflected the main concerns of the study participants. The themes presented here are those considered to be most important in informing future service design.

Ethical considerations

The research was granted a favourable ethical opinion by the NHS Research Ethics Service. Data from participants have remained confidential at all times in accordance with the Data Protection Act (1998). Participants were asked to provide written consent to take part in the study, to have the discussions audio-recorded and for the (anonymised) information to be used in any publications. All participants were informed that they were free to withdraw from the research at any point and without consequence.

Results

Table 1 gives key characteristics of the participants. Of 68 participants in the initial evaluation, 11 consented to take part in this study at a follow-up session held six months after completion of the course.

Although 12 non-attenders were interviewed, data gathered during two of the interviews were excluded from the analyses: one patient subsequently attended the programme and the other could not be prompted to discuss the topic at hand.

Synthesis of data from the two avenues of investigation enabled the identification of four key themes. These are summarised in Table 2 and described in more detail below, illustrated with the use of direct quotations from study participants.

Barriers to accessing the service: diagnosis

The significance placed on an individual's diabetes and perceived need to attend the programme were often linked to their treatment on diagnosis. Non-attenders reported being told that their condition was 'borderline', making it difficult for them to understand the potential value of the programme.

'I've never seen a doctor about diabetes, it's always just been the nurses… there's nothing that's aroused any sense of importance, to me it's always been a minor ailment.'
Non-attender

The main motivating factor for participation in the programme was a fear of the complications associated with uncontrolled diabetes, which did not seem to have been communicated as effectively to the non-attenders.

'Well, my practice nurse, I mean from day one showed me photographs of these absolutely disgusting things that happen to you. It really frightened the living daylights out of me and I thought "no, I'm going, I'm not having that".'
Participant

Barriers to accessing the service: communication

Participants were initially apprehensive about attending the programme but described it as one of a 'list of people to see', suggesting it had been communicated as not entirely optional. Among non-attenders, the voluntary nature of the programme was further justification for its perceived lack of value.

'She [the practice nurse] said to me it was optional if I wanted to go or not, so I didn't do anything about it.'
Non-attender

There were a number of misconceptions about the programme among non-attenders; for example, some were unaware that it involved further education from the dietitian. All of those interviewed had the impression that the programme consisted mainly of exercise, and for many this had been a major factor in their decision not to attend.

'She [the practice nurse] just said there would be exercises…"bring your shorts"…I just wasn't very sure that it was the age for me to go to or not.'
Non-attender

Barriers to accessing the service: Existing co-morbidities

A key factor in the decision not to attend the programme was the competing priorities of different illnesses. The non-attenders all had co-morbidities that they perceived to be more significant than type 2 diabetes.

'To me the diabetes is a minor thing and I wasn't prepared to make the extra effort to go there… if it was going to make the angina worse.'
Non-attender

Barriers to accessing the service: practical considerations

There were additional concerns among non-attenders that staff would not be aware of their medical history and that an eight-week

Major themes	Minor themes
Barriers to accessing the service	Diagnosis Communication Existing co-morbidities Practical considerations
Perceptions of the programme	Structure and format Content Impact on diabetes management
Awareness and understanding of type 2 diabetes	Shock Stigma Empowerment
Perceptions of exercise	Personal preference Age-related factors Fear

Table 2. Key themes arising from interviews and focus groups

course was too time-consuming.

'It was eight weeks, it's a bit hard for me to go regularly…it would be easier to take a couple of days off work than it would be to attend every week for eight weeks.'
Non-attender

Participants were positive about the service staff, and felt that both the course and individual sessions were of the correct duration. It was acknowledged that a longer course might result in a higher dropout rate due to lack of motivation and commitment.

Perceptions of the programme: structure and format

Participants found the course enjoyable and felt comfortable in an informal group setting, although some would have liked more time to address individual concerns. The programme was perceived to have been well organised and provided lots of 'food for thought'.

'They phased it nicely over the eight weeks…so we had a portion to take home and digest…And we understood that, came back and if we had any questions we could ask, and then start the next session.'
Participant

Perceptions of the programme: content

The educational aspect of the sessions was greatly appreciated, as the information was felt to be useful and easy to understand. The dietary advice was perceived to be particularly beneficial, enabling participants to make manageable lifestyle changes.

'The education side of it is great, it kind of tells you the benefits, it's up to you, y'know, at the end of the day.'
Participant

Perceptions of the programme: impact on diabetes management

Many participants mentioned significant clinical improvements in their condition, which gave them the added motivation to continue leading healthier lifestyles. Strategies for diabetes management in both groups focused heavily on dietary modification, as these changes were felt to be easiest to maintain.

'…your cholesterol's down, your blood pressure's down, y'know, so there's nothing else you can do really, just follow what you're doing.'
Participant

Perceptions of the programme: awareness and understanding of type 2 diabetes

Shock: The diagnosis had come as a shock to both groups. Many had been unaware of the severity of type 2 diabetes and some continued to describe it as a 'minor ailment'. Participants suggested this as a potential reason for non-attendance, with a perception that people are unaware of the problems associated with uncontrolled diabetes.

'…a lot of people aren't aware of the enormity of the problem in later life if you disregard it. I'm saying amputations, I'm saying blindness, I don't think people are aware that this could happen to them'
Participant

Stigma: There was felt to be some stigma attached to having diabetes, although there was disagreement over whether the programme would help to remove or add to this. Non-attenders described feelings of shame at having 'brought the diabetes on themselves' and concern that others would judge them.

'I don't want everybody else to know I've got diabetes…it's like letting the world know, oh I'm handicapped or I'm disabled, you know.'
Non-attender

Conversely, one of the motivating factors given by participants' was a desire to meet others 'in the same boat', to share their experiences and learn from one another.

Perceptions of the programme: empowerment

Participants felt that the programme enabled them to accept and feel more in control of their

diabetes, emphasising that it is 'a condition, not an illness'.

'I don't think I really accepted this, not disregarded it, I just thought it was something that people have. It wasn't 'til I came on this eight-week course that I realised it's a condition, and it can be addressed and looked after.'
Participant

Perceptions of exercise: personal preference

Participants enjoyed the exercise sessions but most had not maintained increased activity levels since completing the programme, often as a result of family, work or other commitments. The preferred activity was walking, but this was strongly influenced by seasonal factors. All leisure activities mentioned by non-attenders could be described as sedentary.

'…I would say I'm more active….not so much in the winter, obviously because of the weather but erm, once the weather clears, I walk virtually everywhere I can.'
Participant

Perceptions of exercise: age-related factors

Both groups perceived gym-based exercise as being inappropriate for older adults, describing it as not personalised, interesting or stimulating enough.

'I tend to think of the gym as a young person's place rather than an elderly, sort of like a 60-year-old or 70-year-old people in the gym. I think it's possibly not the best way to exercise when you get to that age.'
Participant

Perceptions of exercise: fear

Non-attenders expressed considerable fear of exercise and perceived attendance on the programme as potentially detrimental, rather than beneficial, to their health.

'With the angina problem I am not quite frankly capable of doing any sort of exercise…soon as they mentioned exercises and that I…no way.'
Non-attender

Individuals in both groups were concerned about over-exerting themselves, and some non-attenders were particularly uncomfortable with attending a leisure centre or exercising in a group.

Discussion

The above findings suggest that a lifestyle intervention for type 2 diabetes can be both enjoyable and beneficial, but that there are a number of barriers to be overcome in order to reach all those that might benefit. The most significant barriers identified in this study were a lack of understanding and knowledge about the severity of diabetes, and about the potential benefits of increased physical activity levels for all age groups. The findings highlight a number of fears, concerns and misconceptions about exercise, which acted not only as initial barriers to accessing the programme but also to maintaining higher activity levels following completion of the course.

This study aimed to explore the views and experiences of people with type 2 diabetes from one urban area in northern England. The relatively small sample size and method of purposive sampling mean that the results may not be generalisable. However, due to the consistency of the findings with the existing literature, the researchers believe that the conclusions are robust. Previous research has shown than many medically vulnerable adults are fearful of pain or discomfort that may occur during exercise, and older adults in particular may perceive that exercise is for the young.[25] The conviction that one can successfully engage in physical activity is exercise self-efficacy, which is known to be positively associated with adherence to structured programmes.[26] Individualised programmes may have the greatest effect on sustained physical activity.[12,27,28] Healthcare professionals also have an essential role to play in persuading adults to engage in physical activity.[4]

This research highlights the need for raised awareness of type 2 diabetes among the at-risk population, and the need for tailored lifestyle interventions for those diagnosed with the condition. Interventions must take account of individuals' concerns and preferences, particularly around exercise, in order to enhance participation and maintenance of the key messages. Service providers should produce clear information that explains the purpose and format of the intervention, alleviating any fears or misconceptions that potential participants might have. It is also recommended that providers explore different modes of delivery, such as block study days, education-only options, and alternatives to gym-based activities. This is of particular importance in attempting to address the needs of older patients. Recommendations for future research include further study into perceptions of exercise among older adults and those with type 2 diabetes, and also an exploration of the way that a diagnosis of type 2 diabetes is communicated by different health care professionals.

Acknowledgements

This study was commissioned and funded by Newcastle Primary Care Trust. The researchers would like to acknowledge the work of the Diabetes Nurse Specialists in the development of the study and recruitment of participants. Staff at Newcastle Nutrition provided

support for ASB, while staff from Newcastle University provided academic supervision. Secretarial staff at Newcastle and Northumbria Universities assisted with transcription. Finally, the researchers would like to thank all of those who gave up their time to participate in the study.

Conflict of interest statement:
None

References

1. Department of Health. Structured Patient Education in Diabetes. London: DoH, 2005.
2. Department of Health. National Service Framework for Diabetes. London: TSO, 2001.
3. NICE Health Technology Appraisal. Guidance on the use of Patient Education Models for Diabetes. London: NICE HTA no. 60, 2003.
4. Nelson KM, Reiber G, Boyko EJ. Diet and exercise among adults with Type 2 diabetes. *Diabetes Care* 2002; **25:** 1722–1728.
5. Garcia R, Suarez R. Diabetes education in the elderly: a 5-year follow-up of an interactive approach. *Patient Educ Couns* 1996; **29:** 87–97.
6. Friedman NM, Gleeson JM, Kent MJ, *et al.* Management of diabetes mellitus in the Lovelace Health Systems' EPISODES OF CARE Program. *Eff Clin Prac* 1998; **1:** 5–11.
7. Rickheim PL, Weaver TW, Flader JL, *et al.* Assessment of group versus individual diabetes education: a randomised study. *Diabetes Care* 2002; **25:** 269–274.
8. Cooper HC, Booth K, Gill G. Patients' perspectives on diabetes health care education. *Health Educ Res* 2003; **18:** 191–206.
9. Kirk A, Mutrie N, MacIntyre P, *et al.* Increasing physical activity in people with Type 2 diabetes. *Diabetes Care* 2003; **26:** 1186–1192.
10. Krook A, Holm I, *et al.* Reduction of risk factors following lifestyle modification programme in subjects with Type 2 (non-insulin-dependent) diabetes mellitus. *Clin Physiol Funct Imaging* 2003; **23:** 21–30.
11. Matteucci E, Giamietro O. Closing the gap between literature and practice: evaluation of a teaching programme (in the absence of a structured treatment) on both Type 1 and Type 2 diabetes. *Diabetes Nutr Metab* 2003; **16:** 298–305.
12. Clark M, Hampson SE, *et al.* Effects of a brief tailored intervention on the process and predictors of lifestyle behaviour change in patients with Type 2 diabetes. *Psychol Health Med* 2004; **9:** 440–449.
13. Harland J, White M, *et al.* The Newcastle exercise project: a randomised controlled trial of methods to promote physical activity in primary care. *BMJ* 1999; **319:** 828–832.
14. Department of Health. At least five a week: evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer. London: TSO, 2004.
15. UK Prospective Diabetes Study Group. Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with Type 2 diabetes [UKPDS 33]. *Lancet* 1998; **352:** 837–853.
16. Boule NG, Haddad E, *et al.* Effects of exercise on glycemic control and body mass in Type 2 diabetes mellitus. A meta-analysis of controlled clinical trials. *JAMA* 2001; **286:** 1218–1227.
17. Tuomilehto J, Lindstrom J, *et al.* Prevention of Type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med* 2001; **344:** 1343–1350.
18. Holland J, Furness J, *et al.* A supervised exercise programme for people with diabetes. *J Diab Nurs* 2002; **6:** 153–156.
19. Tudor-Locke CE, Myers AM, *et al.* Preliminary outcome evaluation of the First Step Program: a daily physical activity intervention for adults with Type 2 diabetes. *Patient Educ Couns* 2002; **47:** 23–28.
20. Moffatt S, White M, *et al.* The impact of welfare advice in primary care: a qualitative study. *Crit Pub Health* 2004; **14:** 295–309.
21. Morgan DL. Focus groups as qualitative research, 2nd edn. London: Sage, 1997.
22. Denzin NK. The research act: a theoretical introduction to sociological methods, 2nd edn. New York: McGraw Hill, 1978.
23. Boyatzis RE. Transforming qualitative information: thematic analysis and code development. London: Sage, 1998.
24. Richie J, Lewis R. Qualitative research practice. London: Sage, 2003.
25. Seefeldt V, Malina RM, Clark MA. Factors affecting levels of physical activity in adults. *Sports Med* 2002; **32:** 143–168.
26. Bandura A. Self-efficacy: the exercise of control. New York: W.H. Freeman, 1997.
27. DiLoreto C, Fanelloe C, *et al.* Validation of a counselling strategy to promote the adoption and the maintenance of physical activity by Type 2 diabetic subjects. *Diabetes Care* 2003; **26:** 404–408.
28. Skinner TC, Cradock S, *et al.* Four theories and a philosophy: self-management education for individuals newly diagnosed with Type 2 diabetes. *Diabetes Spectrum* 2003; **16:** 75–80.

Conference Notice

International Nursing Research Conference – Facing the challenge of health care systems in transition

30 June – 3 July 2008, Jerusalem, Israel

For further details and to register please contact:
Conference Secretariat, International Nursing Research Conference, Diesenhaus-Unitours – Conventions Department, PO Box 57176, Tel Aviv 61571, Israel. Tel: +972 3 5651324, fax: +972 3 5610152, e-mail: conven4@diesenhaus.com, website: www.internationalnursingconference.org