



Provided by the author(s) and NUI Galway in accordance with publisher policies. Please cite the published version when available.

Title	Participants' perceptions of the factors that influence Diabetes Self-Management Following a Structured Education (DAFNE) programme
Author(s)	Murphy, Kathy; Casey, Dympna; Dinneen, Sean
Publication Date	2011-04-15
Publication Information	Murphy, K, Casey, D, Dinneen, S, Lawton, J, Brown, F (2011) 'Participants' perceptions of the factors that influence Diabetes Self-Management Following a Structured Education (DAFNE) programme'. Journal Of Clinical Nursing, 20 :1282-1292.
Publisher	Wiley
Link to publisher's version	http://dx.doi.org/10.1111/j.1365-2702.2010.03564.x
Item record	http://hdl.handle.net/10379/4199
DOI	http://dx.doi.org/DOI 10.1111/j.1365-2702.2010.03564.x

Downloaded 2022-05-21T05:25:51Z

Some rights reserved. For more information, please see the item record link above.



Participants' Perceptions of the Factors that Influence Diabetes Self Management Following a Structured Education (DAFNE) Programme.

Kathy Murphy¹, Dympna Casey², Sean Dinneen³, Julia Lawton⁴ and Florence Brown⁵

¹Professor of Nursing, National University of Ireland Galway, Ireland

²Senior Lecturer, National University of Ireland Galway, Ireland

³Senior Lecturer in Medicine, Clinical Science Institute, National University of Ireland, Galway, Ireland

⁴Senior Research Fellow, Centre for Population Health Sciences, School of Clinical Sciences and Community Health, The University of Edinburgh Medical School, Edinburgh; UK

⁵National Care Advisor, Diabetes UK Northern Ireland, Belfast, UK

Correspondence

Kathy Murphy, Professor of Nursing, National University of Ireland, Galway, Ireland.

E-mail: Kathy.Murphy@nuigalway.ie

ABSTRACT:

Aim: The aim of this study was to identify the factors that influence participants' implementation of the Dose Adjustment For Normal Eating (DAFNE) self management guidelines

Background: The literature reveals that structured education programmes such as DAFNE have many positive outcomes for people with type 1 diabetes including a decrease in HbA1c levels, reductions in hypoglycaemic events, reduction in hospital admissions and increased and sustained quality of life. Few researchers however have gathered participants' perspectives on the impact of participation in a DAFNE programme on self management capacity.

Data Sources: Interviews were undertaken with 40 participants who had completed a DAFNE in one of 5 study sites across Ireland. Purposive sampling was used with relational sampling towards the end of interviews as issues emerged. The interviews lasted from 30 to 60 minutes and were transcribed verbatim.

Research Design: This is a grounded theory study. Data collection and analysis were concurrent. The constant comparative technique was used to analyze data.

Findings: Factors that influenced participants' self management of their diabetes following DAFNE were identified. These were: knowledge, support, motivation, relationship shift and empowerment. A core category, 'Being in Control', was the outcome that could be expected if these factors were in place.

Relevance to clinical practice: Understanding the factors that influence the implementation of DAFNE principles can help health professionals give focused support that helps people with diabetes become more empowered. By acknowledging that the person has valuable experience and important expertise regarding their chronic condition health professionals can help the person develop their internal resources so that ultimately the person feels in control and is empowered.

Keywords: Type 1 diabetes, structured education programmes, self management, chronic disease management.

Data Collection Period: Over a period of 24 months 2006-2008

INTRODUCTION

It is estimated that at least 141,063 adults in the Republic of Ireland (4.7%) have diabetes (diagnosed or undiagnosed) and this is predicted to rise to at least 193,944 or 5.6 % of the population by 2015 a 37% increase (HSE, 2008). The Diabetes Federation of Ireland estimates that there are approximately 12,000 people living with type 1 diabetes in Ireland. Diabetes care within Ireland has until recently been traditionally managed; with doctor led hospital based care, focused on encouraging compliance. Education was given at the time of diagnosis and follow-up care provided within a clinic system that has lacked continuity of care (Dinneen et al. 2009). Traditional systems for delivering care to individuals with Type 1 diabetes in Ireland are also very healthcare professional-oriented and have not focused on education in diabetes self-management. Recent preliminary findings of a survey of adult outpatient diabetes care in public hospitals in Ireland reported that 63% of diabetes patients were managed in the hospital setting with 61% rarely or never discharging patients back to general practice (O' Donnell et al. 2009). An audit of a diabetes service in Dublin, Mid-Leinster in 2010 revealed that only 27.5% of people were achieving a target of HbA1c of 7.5 (Marsden et al. 2010). This figure is of concern as the American Diabetes Association HbA1c target is currently 7.0.

Given these concerns, it was decided to introduce a structured education programme, the Dose adjustment for normal eating (DAFNE) programme, in research sites in Ireland to examine the impact of DAFNE on diabetes management and to illuminate the factors that influence self-management. While the DAFNE programme has been delivered in Germany and in the UK and evaluated quantitatively (DAFNE Study Group 2002), there are few studies that have focused on participants' perspectives of the factors influencing self-management following course attendance and none from an Irish context.

Background

Structured education programmes are defined as programmes which are:

...comprehensive in scope, flexible in content, responsive to an individual's clinical and psychological needs and adaptable to his or her educational and cultural background. (NICE 2003, p. 27)

DAFNE is a structured education, self-management programme for people with Type 1 diabetes, which consists of 38 contact hours of group education delivered over five consecutive days in an outpatient setting by a nurse, dietician and doctor. The curriculum covers all aspects of living with diabetes but places a strong emphasis on carbohydrate counting and matching quick-acting insulin to food. The ethos of the programme is underpinned by empowerment principles, the aim being to promote self management skills. Delivering education through a structured education format is

thought to result in a paradigm shift away from a traditional medical model of care to one which is empowering, fosters self-management and develops collaborative relationships with health professionals (Funnell et al. 2009). Evaluations of DAFNE and similar programmes suggest that implementation of this approach is associated with sustained clinically significant improvement in blood glucose control and a decrease in hypoglycaemia (McTyre 2006).

The literature reveals, for instance, that structured education programmes have many positive outcomes for people with Type 1 diabetes, including: a decrease in HbA1c levels (Mühlhauser et al. 1983, Howorka et al. 2000, DAFNE Study Group, 2002, Everett et al. 2003), enhanced compliance rates and reduced hospital admissions (Mühlhauser et al. 1983), increased independence and self-efficacy (Howorka et al. 2000, Everett et al. 2003), enhanced treatment satisfaction (Howorka et al. 2000, DAFNE Study Group 2002), improved quality of life and psychological well-being and a reduction in the frequency of perceived hypoglycaemia events (DAFNE Study Group 2002). Many of these studies have measured quantitative outcomes for participants but few have gathered participants' qualitative perceptions of self-management following such programmes. The aim of this study was, therefore, to explore participants' experiences of participating in DAFNE and to identify factors that influence self-management following course completion.

Factors that impact on ability to self-manage diabetes

The challenges of day-to-day living influence a person's ability to live with and manage their diabetes. Motivation and a willingness to take responsibility for self-care have been identified as prerequisites for effective self-management. (Brown et al. 2002, Veg et al. 2007). Key motivating factors for many people with diabetes are seeing improvement in blood glucose levels and the fear of developing diabetic complications (Rasmussen et al. 2007). As there is no cure for diabetes, individuals have to be resourceful and tenacious if they are to successfully adapt to and manage their disease, feel empowered and attain a satisfactory quality of life (Reynolds 2004).

An empowerment approach aims to optimise self-care through acquisition of knowledge, skills, self-awareness and a sense of personal autonomy allowing individuals to self manage their diabetes (Sigurdardottir & Jonsdottir 2008). Haugbølle et al. (2002) found that, for people with Type 1 diabetes, the desire for personal freedom is a key motivation for self-adjustment. Self-efficacy has also been linked to empowerment as self-efficacy beliefs influence 'how people feel, think, motivate themselves and behave' (Bandura 1994, p. 71). Self-efficacy influences motivation by influencing the goals that individuals set, the amount of effort they exert to attain these goals, how long they persevere in the face of adversity and their resilience if they fail (Bandura 1992). It therefore positively influences the health behaviours of individuals with various chronic diseases, including diabetes (Glasgow et al. 1992, Hurley & Shea 1992). Nagelkerk et al. (2006) investigated the perceived barriers and facilitators to self-management amongst people with type 2 diabetes. They found that participants who felt empowered with good problem-solving skills were more proactive and tended to integrate the self-management of their diabetes into their daily lives. The extent to which people perceive that they can make decisions regarding their chronic illness and have a role in the management of their diabetes is, therefore, important. Knowledge and information are also prerequisites for positive adjustment to chronic illness and better self-care and control (Turk 1979,

Brown 1990, De Weerd et al. 1990). Howorka et al. (2000) and Brooker et al. (2008) found that following an educational programme, participants felt more empowered and in control.

Social support is another key element for good self management (Talavera & Harrison 2002), in particular, family support (Glasgow et al. 2001, Nagelkerk et al. 2006, Carbone et al. 2007) and peer support (Barrera et al. 2002). Stamler et al. (2006) found that peer support from others on a diabetes education programme was key to successful outcomes, while Brooker et al. (2008) found that sharing experiences with other people who had diabetes normalised the experience of diabetes.

Physician support has also been identified as important for effective self-management (Carbone et al. 2007). A collaborative partnership approach between client and health professional is central to feeling valued and involved in decision-making (Paterson 2001, Griffin et al. 2004, Zoffman & Kikevold 2005, Enwistle et al. 2008). In particular, clients feel involved in managing their condition when the health professional is friendly, welcoming, empathetic, respectful, non-judgemental, non-authoritarian and displays an interest in the client's perspective (Rasmussen et al. 2001, 2007, Escudero-Carretero et al. 2007, Enwistle et al. 2008). Ciechanowski et al. (2006) found that unequal power relationships can cause conflicts between the priorities of the health care professional and that of the client. For example, Zoffman and Kikevold (2005) found that clients strove to live life as normally as possible, therefore, 'lifebefore- disease' was their priority. In contrast, some professionals had 'disease-before-life' approach focusing on the physical aspects of diabetes. Similarly, health professionals' preoccupation with blood glucose levels was particularly frustrating for some people with diabetes (Freeman & Loewe 2000, Puder & Keller 2003, Rasmussen et al. 2007, Escudero-Carretero et al. 2007), reflected in a reluctance to return to clinics (Rasmussen et al. 2007, Escudero-Carretero et al. 2007).

In summary, executing self-management plans are frequently compromised by numerous barriers. These include the absence of an empowering approach, poor patient-provider relationships and lack of social support. It is not known, however, whether these factors are applicable to Ireland; therefore, it is important to examine the factors that impact on self-management in Ireland and to compare these to the international literature.

AIMS AND METHODS

The aim of the research is to understand the experience of patients participating in the DAFNE programme. The study uses a grounded theory design focused on description guided by Corbin and Strauss (2008). Corbin and Strauss (2008, p. 1) state that grounded theory can be used: in a more generic sense to denote theoretical constructs derived from qualitative analysis of the data. They also state that a researcher need not go all the way to theory development but should make clear that the focus is on description, concept identification and development. Therefore, the chosen design is appropriate given that the study seeks to understand participants' perspectives and to build a model of relevant factors.

Sample

This qualitative study forms one research arm of the Irish DAFNE Study that commenced in 2006, the main component of which is a cluster randomised controlled trial to evaluate 2 different models of follow-up care post-DAFNE training in 6 DAFNE centres in Ireland (Dinneen et al. 2009). Five DAFNE centres (Table 1) agreed to participate in the qualitative arm. Purposive sampling was used initially and selection criteria included years since the onset of diabetes (Table 2), age (Table 3) and gender (Table 4). In later interviews, theoretical sampling was used to maximise opportunities to develop concepts and emerging categories (Corbin & Strauss 2008). Recruitment continued until conceptual saturation was reached. Interviews were conducted in diabetes centres located at each study site.

Table 1 Description of research Sites

DAFNE CENTRES	SITE DESCRIPTION	DAFNE EDUCATORS
DAFNE CENTRE 1:	large URBAN Acute hospital	CNS, dieticians
DAFNE CENTRE 2 :	large URBAN Acute hospital	CNS, dieticians
DAFNE CENTRE 3:	large URBAN Acute hospital	CNS, dieticians
DAFNE CENTRE 4:	large URBAN Acute hospital	CNS, dieticians
DAFNE CENTRE:5	large URBAN Acute hospital	CNS, dieticians

Table 2 Length of time since diagnosis

<i>Length of Time Since Diagnosis</i>	<i>Number of Participants</i>
2 – < 4 years	5
4 - <6 years	3
7 - < 10 years	6
10 -20	11
21-30	8
31+	7
<i>Total</i>	40

Table 3 Age Profile of Participants

<i>Age Range</i>	<i>Number of Participants</i>
20-30 years	11
31-40 years	11
41-50 years	13
51-60 years	4
61-70	1
71+	0
<i>Total</i>	40

Table 4 Gender of Participants

	<i>Numbers of Participants (%)</i>
Men	15 (37.5)
Women	25 (62.5)
<i>Total</i>	40

Data collection

Data were collected through interviews. A topic guide was used to focus the interview on understanding the experience and covered areas such: the experience of the DAFNE programme, the role of the group, the extent to which people were able to apply DAFNE principles in everyday life and life-style changes. As data collection and analysis progressed questioning was guided by emerging themes and concepts findings. Memos were used to interrogate data and literature sources searched to add to emerging understandings. Interview data were collected by two researchers from 40 participants across five study sites, over 24 months from 2006–2008 (Table 5). Interviews lasted between 45–60 minutes and were tape-recorded with participants' consent and transcribed in full.

Ethics

Ethical approval for the study was obtained from the National University of Ireland, Galway Research Ethics Committee (06/MAY/04), Galway University Hospitals (CA-19) and relevant local hospital Research Ethics Committees. Written consent was obtained from all participants at least 24 hours in advance of the interview. Confidentiality was ensured by the removal of all identifying material.

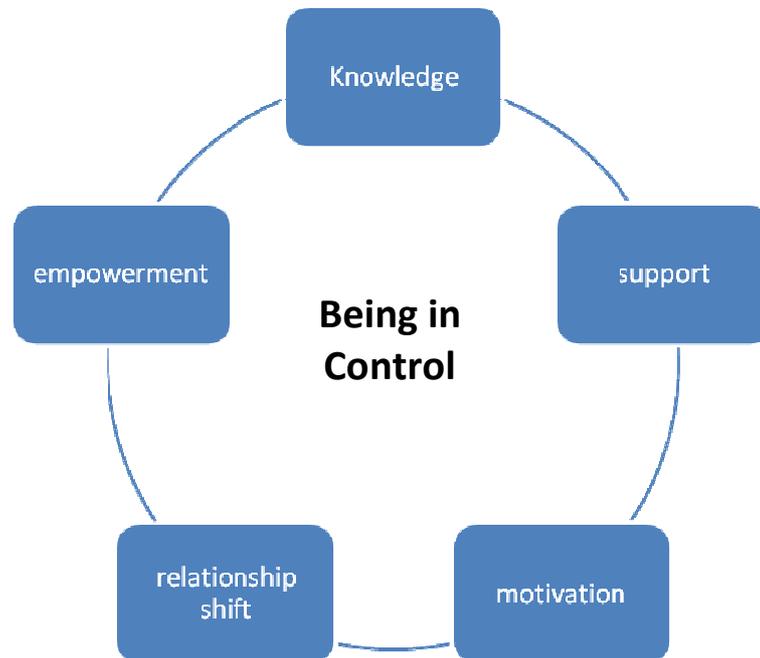
Data analysis

Constant comparative analysis was undertaken concurrently with data collection (Strauss & Corbin 1998, Corbin & Strauss 2008). Initially, each transcript was read and open codes assigned. Axial coding was used to relate concepts together, and these were grouped to form tentative categories. A coding framework was developed from emerging concepts emerging from the data. A process of continuous comparison (Strauss & Corbin 1998) enabled the collapse of categories into factors and the identification of a core category (Fig. 1). Throughout, memos were used to interrogate the data. ATLAS.TI V5.0 (Cleverbridge AG, Cologne, Germany) a qualitative software indexing package, was used to facilitate data coding and retrieval.

Table 5 Number interviews, participants, Types of data and interviewer

<i>DAFNE Research Site</i>	<i>Number of Participants Interviewed</i>	<i>Demographic Data Available</i>	<i>Interviewer</i>
Site 1	9	Yes	KM/DC
Site 2	10		KM/DC
Site 3	11		KM/DC
Site 4	7		KM/DC
Site 5	3		DC
<i>Total</i>	<i>40</i>		

Figure 1 Model illustrating the interrelationship of factors and core category



Rigour

Four criteria were used to ensure rigor: credibility, resonance, confirmability and usefulness. Participants' perspectives were reported as accurately as possible and they were sent a copy of their transcripts and asked to confirm that the content was accurate. Two participants requested a minor change to their transcript following this process. Comments were also invited from experts in the field who confirmed that the findings resonated with their experiences. Two researchers were involved in the analysis of transcripts. All codes, concepts and categories were compared and agreed. Selections of transcripts were read by the full research team, and categories and concepts were agreed.

FINDINGS

Factors that impacted on a person's ability to self-manage following DAFNE were identified from the findings. A core category – 'Being in control' – and five factors: knowledge, motivation, support, relationship shift and empowerment were revealed from the analysis of data and literature (Fig. 1).

Being in control

'Being in Control' emerged as the core category as all other categories were related to this. 'Being in control' was the overall outcome that could be expected when a person was empowered to implement the DAFNE principles to self manage their diabetes:

a funny thing to say that, after 30 years, you can control it yourself. But, to me...it's an advantage, a great advantage, I'm sure that people who've done

the DAFNE course would find that there is a great advantage to it. You're happy-go-lucky again... you don't have to worry. (P40–0033)

I feel maybe that I have more control of my diabetes, or what I eat, or you know if I change my routine – if I don't want to eat, I don't have to eat, which is a big thing. (P09–0031)

Factors that influence self-management

All factors were related to being in control. The interrelationship between factors is evident as the extent to which any one individual factor mattered was dependent on other factors being in place. Therefore, while factors are described individually, their inter-relationship is central to the model also acknowledged and presented in (Fig. 1). Each factor is connected to all other factors, and this is depicted by linking all factors together in a circle around the core category.

Gaining knowledge

This factor describes how increased knowledge influenced participants' management of their diabetes. It is interesting that all participants felt that, prior to DAFNE, they had lacked knowledge about the action of insulin on blood glucose levels and the carbohydrate values of food to manage their diabetes effectively regardless of the time since diagnosis. For all participants, knowledge was described as essential for good management. Participants all agreed that the increased knowledge had impacted hugely on their diabetes management as it enabled them to make informed choices about food, appropriate adjustments to insulin and manage hypoglycaemic events effectively:

Your doctor would say a long time ago, take a Mars bar, take a mouthful of Lucozade, at least I know now, not to take a full Mars bar, I know what a Mars bar is going to do and that was through the course...before you would actually take too much and have a hypo afterwards...I really know a lot more now. (P31–0046)

Knowledge was therefore perceived to be an essential part of gaining good control and making informed decisions around self-management.

Motivation

DAFNE requires people to be persistent and, at times, to work with uncertainty. Some participants suggested that motivation was an attribute which was characterised by persistence and curiosity and that these components were important if a person was to embed DAFNE principles into their management:

I'd say the biggest thing is ... It's a waste of a week if they're not willing to work at it...whereas for the inquisitive type of person 'hey, why is this happening? Why isn't this working?' Or like me, somebody that didn't... understand the food... (P42–0039)

Sticking with it in times of uncertainty was not easy; however, some participants managed to do this and enjoyed the challenge:

not everything is going to go by the book and you have to realise that and some meals, one time, seem to trigger a high and if it was something I enjoyed, I would eat it again and I would suddenly discover it was exactly as you had expected it to be, so there is obviously some other factors, whether your frame of mind, or stress, or whatever is coming into play, but you just have to take that as part of it, its not going to be perfect,...you're getting stable results, which is encouraging. (P20–0081)

For most participants, preventing complications and seeing improvements in their HbA1c were important motivational factors. All participants described the fear of developing complications and the need for good control to prevent this:

Well, I suppose it's the talk of complications of diabetes. And my biggest fear is losing my sight...that alone for me is motivation to keep my blood sugar under control and DAFNE gave me the skills I needed to do that... - I thought I knew it all, being a nurse, working with people, being a diabetic for five years, I thought I didn't have anything to learn, but I was sorely mistaken. So it's even just having those skills that I didn't have before. (P13–0100)

However, some participants became despondent, and they found that DAFNE took more time. They also found the uncertainty unsettling and the self-responsibility for diabetes management, difficult:

But I just have not got the determination nor the lifestyle, nor do I suppose really, do I want to be tied to it, so DAFNE is much more time, it takes a terrible lot of effort and as a result, I'm ...I'm not disappointed with the DAFNE thing, really all the medical knowledge and the testing ability and the flexibility of the insulin control, it all works if you are...if you're prepared to make it work.. I'm disappointed with myself and how my approach to living is the problem... (P20–0062)

Motivation was important because it determined the extent to which participants' persevered and used knowledge to self manage their diabetes. While some participants were very motivated, others found that they did not have the motivation to manage their diabetes.

Having support

Participants also described the importance of having support. While they emphasised the need for family support and understanding, their accounts focused on the support of other DAFNE participants in the group and health professionals.

For many participants, the support of other DAFNE participants was really important. Sharing experiences really helped and they felt they learnt from the expertise of other participants. It was clear that group support was important and that there was a real sense of empathy and fun:

I found them brilliant...I found them really sociable, outgoing...it wasn't like an exhaustive activity or day, we did have some fun in the middle of it. It was very useful in that you met people who had the same experiences and people who offered advice on certain topics, so they said, from their experience, it

really was worth getting, so I suppose it was extra kind of ideas and experiences of other people that you could associate with... (P31–0042)

The support of health professionals was also valued by participants. Working DAFNE out in real life was described by some participants as problematic, and they found that having a health professional who knew them and understood DAFNE principles was crucial. Participants described how the ability to talk through issues and problems with a health professional really made a difference:

Knowing that there's back-up there, that I can ring if I get a problem, I think that helps me, rather than just thinking, there's no-one I can talk to...just, it's not working, forget it. I think...that helps motivate me...I just rang after the course to say that my sugars were going very well, so I rang to thank them. (P13–0095)

Some participants, therefore, linked support and motivation directly and suggested that having support really made a difference to sustaining the DAFNE approach.

Relationship shift

Relationship shift describes the potential for change in the relationship with health care professionals as a result of increased knowledge. All participants described the relationship that they had had with health professionals prior to DAFNE as paternalistic and judgmental. They suggested that the prior system lacked continuity and that interactions with health professionals were often focused on being scolded:

...the old routine of, you know, you're queuing up for ages outside in the out-patients and then you're called in and someone puts stuff in your eyes and then you go off and give a sample of urine and then people....and then eventually you arrive around to sit down in front of some other white coat and have a look at your file and then they take out the big bat and give you a few slaps! (P13–0085)

Some participants explained, therefore, that they had learned to lie so that clinic visits were less traumatic:

...In the old days, they trained you to lie. I was extremely honest and told them anything, but as soon as you told them, it was hands in the air horror! 'Do you mean to say you had four pluses of sugar in your urine?' ...I mean they shouted at you as a child... a twelve year old child, I came out in tears, shaking from this consultant, ...the distress that it caused me at that age was utterly ridiculous, it was, really bad, ... that was the old approach. So, I've come up through a whole range of different attitudes to diabetes. (P20–0062)

Following DAFNE, however, participants perceived that their relationships with health professionals had changed. Specifically, they felt that the knowledge they gained had helped to increase their power and this had led to the development of more collaborative relationships. Many participants suggested that health professionals now listened to their perspective, respected their expertise and that there was a shift to 'knowing me' as a person:

... it's one on one, because you feel you know as much as they do. And if you've any kind of a problem, they'll try and tell you something and you'll say 'I think I agree with you, but what about this? What about that?' You kind of know as such as they know now ... It's a closer relationship. (P31-0046)

Participants suggested that their expertise was now recognised and their perspective listened to and valued. This change in power also resulted in participants feeling an increased sense of responsibility for self-management.

Empowerment

This factor describes participants' perceptions of control and power following the DAFNE course. Some participants found that they now understood what was happening to their blood glucose levels and the relationship between food and blood glucose. As a result, they felt more empowered and in control:

I feel maybe that I have more control of my diabetes, or what I eat, or you know if I change my routine – if I don't want to eat, I don't have to eat, which is probably a big thing. If you're going to exercise, you're going to drink alcohol...you can calculate your response to that...It's empowering. (P31-0042)

Participants claimed that DAFNE had given them the freedom to make choices about how they lived their lives and described how this impacted on their day-to-day life:

DAFNE, it's given me more freedom, because I'd be like 'it's dinnertime, I have to go and eat my dinner' and it would break...you might be just in the middle of getting something finished, you know and it was like 'no, I have to go. I have to go and eat my dinner, it's one o'clock', whereas now, I can choose. (P44-0042)

Participants emphasised that it was the capacity to make informed choices about food that was important to them. While they often did not exercise the choice to do anything differently, it was the knowledge that they could choose which they valued and found liberating:

...a piece of cheesecake...well I look at it now and I think...I'd quite like it but, I'd have to take an injection and I can't be bothered doing that, so I don't really want it,...it seems to have given me a sense of responsibility for eating the food... I didn't have that sense of responsibility before...it's maybe just the mental change...maybe it's just put the control back again, I don't know what it is, but it certainly had a different...it's had a mental effect on me ... (P20-0062)

Participants, therefore, found the freedom to choose liberating and while they often did not exercise the choice to do anything differently, it was knowing that they could choose that was so important.

STUDY LIMITATIONS

DAFNE is the first structured group education programme offered to people with Type 1 diabetes in Ireland. It is not known, therefore, if participants by the nature of their self selection were more motivated and enthused than the general diabetic population to take part in such a programme. Time constraints had an impact on the extent to which certain literature could be included in the analysis, pragmatic choices therefore had to be made and these may impact on the interpretation of findings.

DISCUSSION

This study identified the factors that influenced people with Type 1 diabetes to adopt the DAFNE principles to better self manage their diabetes. These factors were found to be interrelated and, when they were in place, the overall outcome was that participants felt in control and described being able to self-manage their diabetes more effectively.

This research found that five factors influenced the implementation of self-management following DAFNE: knowledge, motivation, support, empowerment and a relationship shift. In doing so, it strengthens the findings from studies conducted in other countries which have similarly found these factors to be important in self-management (Turk 1979, Brown 1990, Funnell et al. 1991, De Weerd et al. 1990, Howorka et al. 2000, Brooker et al. 2008) and provides a basis for international comparison.

The findings suggest that knowledge is an essential part of self-management and contributes to an overall sense of patient empowerment. Many other researchers have found that knowledge is essential to effective diabetes self management (Rasmussen et al. 2001, Nagelkerk et al. 2006). What is surprising, however, is that all participants stated that, prior to DAFNE, they did not have the knowledge required to self-manage their diabetes. This is an important finding. Most education is given at the time of diagnosis and relates to basic dietary education, blood glucose self-monitoring, injecting insulin and managing hypoglycaemia. This raises the issue of when is the most appropriate time to give in-depth patient education, as well as question the effectiveness of some types of patient education. Enwistle et al. (2008) found that people retained little information from the time of initial diagnosis, whilst Brooker et al. (2008) questions the effectiveness of knowledge which is not underpinned by an empowerment-based approach.

Funnell and Anderson (2004) argue that empowerment is key to diabetes self-management. Funnell et al. (1991) suggests that people with diabetes feel empowered when they have the knowledge, skills, attitude and awareness necessary to control their own behaviour to improve their quality of life. Empowerment is, therefore, an essential factor in fostering self-management, as it enables the personal responsibility for self-management to be accepted (Turk 1979, Brown 1990, Funnell et al. 1991, De Weerd et al. 1990, Howorka et al. 2000). The findings of this study suggested that some people found self-management difficult and some found it hard to take on the responsibility for it. Veg et al. (2007) categorised people with Type 2 diabetes into two groups: the disease managers and the disheartened. Disease managers felt responsible for the management of their condition, were compliant and used health professionals' advice. The disheartened were frequently frustrated with their blood glucose levels and related their fluctuation to personal problems or dissatisfaction

with health professionals. These individuals lacked motivation to self-manage their diabetes. Self-managing a chronic condition is challenging and requires self-motivation, tenacity, empowerment and enhanced self-efficacy.

Participants in this study described how there had been a ‘relationship shift’ with health professionals which had resulted in more collaborative relationships. Other researchers have found that people with diabetes who have had good experiences of communication with health care providers have better self-management practices (Piette et al. 2003, Carroll & Marrero 2006). The need for collaborative relationships with health professionals is supported by the work of Enwistle et al. (2008). Piette et al. (2003), Cooper et al. (2003) and Carroll and Marrero (2006) found that collaborative ways of working were an essential part of people taking on the responsibility of self-management. Cooper et al. (2003), however, found that not all health professionals are ready to work collaboratively with patients and seriously question the capacity of the current health system to rise to the challenges of empowering people to undertake disease self-management. Therefore, there is a real need for health professionals to develop collaborative working methods and strategies for empowering people undertake disease self-management. The findings of this study also suggest that knowledge, delivered in an empowering format, is related to the development of collaborative relationships.

What is clear from the findings presented here is that the factors that impact on self-management are inter-related. The literature provides some support for the inter-relationship between factors. Funnell et al. (1991) linked empowerment to knowledge, appropriate skills and self-awareness, while Turk (1979), Brown (1990), De Weerd et al. (1990) and Howorka et al. (2000) found that knowledge was directly related to empowerment. While the findings of this research support knowledge as a factor that influences self-management and empowerment, the extent to which it results in these outcomes is mediated by the individual’s motivation and support. The way knowledge is delivered is also a factor (Brooker et al. 2008) and this is substantiated by this study’s findings.

CONCLUSION

Understanding the factors that influence self-management in Ireland is important as it broadens prior knowledge and confirms the factors that are important to self-management. This research identified the factors that influenced self management behaviours following participation in the DAFNE programme. It also highlighted the importance for health professionals to focus on building on an individual’s knowledge and facilitating motivation.

RELEVANCE TO CLINICAL PRACTICE

Health professionals require person-centred qualities and associated skills that enable the collaborative relationship. These qualities and skills will also assist health professionals to adopt an empowering approach when working with people with diabetes. By acknowledging that the person has valuable experience and important expertise regarding their chronic condition, health professionals can help the person develop their internal resources so that ultimately the person feels in control and is empowered.

Acknowledgements

We acknowledge the support given from the qualitative team: Colin Bradley. Thanks also to project managers Lisa Daly, Mary Clare O'Hara and Joan Kavanagh who participated by setting up interviews and meetings. Thanks also to all the DAFNE Educators who facilitated access for interviews. Thank you to all the participants who shared their experiences and gave their time so generously. We also acknowledge the support of the DAFNE Collaborative.

This study is funded by the Health Research Board (HRB) in Ireland, through a Health Services Research and Development award (HS-2005–25). This project was also supported by an educational grant from Novo Nordisk.

Contributions

Study design: KM, DC, JL, FB, SD; data collection and analysis: DC, KM, JL, FB, SD and manuscript preparation: DC, KM, JL, FB.

Conflict of interest

None

References

- Anderson R.&Funnell, M. (2000) Compliance and adherence are dysfunctional concepts in diabetes care. *Diabetes Educator*. 26 (2000) 597–604.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachandran (Ed.). *Encyclopedia of human behavior* (4), 71-81. New York: Academic Press.
- Bandura, A. (1992). Exercise of personal agency through the self-efficacy mechanism. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action* (pp. 3-38). Washington, D.C.: Hemisphere.
- Barrera, M; Glasgow, R. ; McKay, H ; Boles, Edward G (2002) Do Internet-based support interventions change perceptions of social support?: An experimental trial of approaches for supporting diabetes self-management. *American Journal of Community Psychology*. 30. (5): 637-54
- Benoliel JQ. Grounded theory and nursing knowledge. *Qualitative Hlth Res* 1996; **6**: 406-428.
- Brown S. (1990) Meta-analysis of diabetes patient education research: Variations in intervention effects across studies. *Research in Nursing & Health*. 15 (6): 409-41
- Brooker, S. Morris, M. Johnson, A. (2008) Empowered to change: evidence from a qualitative exploration of a user-informed psycho-educational programme for people with Type 1 diabetes. *Chronic Illness* 4 (41) 41-53.
- Brown J.B., Harris S.B., Webster-Bogaert S., Wetmore S., Faulds C. & Stewart M. (2002) The role of patient, physician and systemic factors in the management of Type

2 diabetes mellitus. *Family Practice Oxford University Press* **19**, 344–349. <http://www3.interscience.wiley.com/journal/118563335/references> - q10#q10

Carbone, E. Rosal, C. Torres, M. Gorins, K. & Bermudez O. (2007). Diabetes self management: perspectives of Latino patients and their health care providers. *Patient Education and Counseling* **66**: 202-210.

Carroll A. & Marrero D. (2006). How do parents perceive their adolescent's diabetes: a qualitative study. *Diabetic Medicine* **23** (11): 1222-1224

Chenitz WC & Swanson JM. (1986) *From Practice to Grounded Theory. Qualitative Research in Nursing*. Massachusetts: Addison-Wesley.

Ciechanowski, P.S., Russo, J.E., Katon, W., Von Korff, M., Simon, G.E., Lin, E.H.B., et al. (2006). Association of patient relationship style and outcomes in collaborative care treatment for depression in patients with diabetes. *Medical Care*, **44**, 283-291

Ciechanowski PS, Katon WJ, Russo JE, Walker EA. (2001) The patient– provider relationship: attachment theory and adherence to treatment in diabetes. *American Journal of Psychiatry* **158**:29–35.

Coates, V. & Boore, J. (1998) the influence of psychological factors on the self management of insulin dependent diabetes mellitus. *Journal of Advanced Nursing* **27**, 528-537.

Cooper, H.C. Booth, K. Gill, G. (2003) Patients perspectives on diabetes health care education. *Health Education Research* **18** (2) 191-206.

DAFNE Study Group (2002) Training in flexible intensive insulin management to enable dietary freedom in people with Type 1 diabetes; dose adjustment for normal eating (DAFNE) randomised controlled trial. *BMJ* **325**, 746-751.

De Weerd, I. Visser, A. Kok, G. & van der Veen, E. (1990). Determinants of active self care behaviour of insulin treated patients with diabetes: implications for diabetes education. *Social Science and Medicine* **30**, 605-615.

Downey et al., 2003

Dinneen, S, O' Hara M.C. Byrne, M. Newell J. Daly L. O' Shea D. Smith D. for the Irish DAFNE Study Group The Irish DAFNE Study Protocol: A cluster randomised trial of group versus individual follow-up after structured education for Type 1 diabetes *Trials* 2009, **10**:88doi:10.1186/1745-6215-10-88

Enwistle, V. Prior, M. Skea, Z. & Francis J. (2008) Involvement in treatment decision making: its meaning to people with diabetes and implications for conceptualisation. *Social Science & Medicine*. 362-375.

Escudero-Carretero María J, Prieto-Rodríguez, M. Fernández-Fernández, I. March-Cerdá, J. (2007) Expectations held by Type 1 and 2 diabetes mellitus patients and their relatives: the importance of facilitating the health-care process. *Health Expectations* **10**(4): 337-349

Everett J, Jenkins E, Kerr D, Cavan D (2003) Implementation of an effective outpatient intensive education programme for patients with Type 1 diabetes. *Practical Diabetes International* 20(2); 51-55

Freeman and R. Loewe, Barriers to communication about diabetes mellitus. *Journal of Family Practice* .39 (2000), pp. 507–512.

Funnell MM, Brown TL, Child BP, Haas LB, Hosey GM, Jensen B, Maryniuk M, Peyrot M, Piette JD, Reader D, Siminerio LM, Weinder K, Weiss MA, (2009): National Standards for Diabetes Self-Management Education. *Diabetes Care*, 32(Suppl 1):S87-S94

Funnel, M. & Anderson.R. (2004).Empowerment and self management of diabetes.*Diabetes Educator*. 31(53): 123-127.

Funnell, M. & Anderson M. Arnold, P. Barr, M. Donnelly, P Johnson, *et al.*., Empowerment: an idea whose time has come in diabetes education. *Diabetes Educator* 17 (1991) 37–41.

Glaser, B.(2004) Remodeling Grounded Theory [Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 5(2), Art. 4, <http://nbn-resolving.de/urn:nbn:de:0114-fqs040245>. Accessed Aril 9th 2009.

Glaser B.(1978) *Theoretical Sensitivity*. San Francisco, USA: The Sociology Press,

Glasgow, R. E., D. J. Toobert, *et al.*.(1992). "Improving self-care among older patients with Type II diabetes: The "sixty something..." study." *Patient Education and Counseling* 19: 61-74.

Glasgow, R. McKay, H. Piette, J. Reynolds, K. (2001) The RE-AIM framework for evaluating interventions: what can it tell us about approaches to chronic illness management. *Patient Education Counselling* 44:119-127.

Griffin SJ, Kinmonth AL, Veltman MW, Gillard S, Grant J, Stewart M, (2004). Effect on health related outcomes of interventions to alter the interreaction between patients and practitioners: a systematic review of trials. *Ann Fam Med* 2:595-608

Health Service Executive. Diabetes Expert Advisory Group. First Report: April 2008. Howorka K.Pumprla, J. Wagner-Nosiska, D. Grillmayr, H. Schlusche C. &Schabmann, A. (2000) Empowering diabetes outpatients with structured education: Short-term and long-term effects of functional insulin treatment on perceived control over diabetes. *Journal of Psychosomatic Research*48 (2000), pp. 37–44.

Hurley C & Shea, CA. (1992) Self-efficacy: Strategy for enhancing diabetes self-care, *Diabetes Educator*18: 146–150

McTyre D. (2006).DAFNE (Dose Adjustment for Normal Eating): structured education in insulin replacement therapy for Type 1 diabetes. *eMJA* 184 (7): 317-318

- Mühlhauser, I. Jorgens, V. Berger, M. Graniger, W. Gurtler, W. Hornke, L. Kunz, A. Scherthaner, G. Scholz, V. And Voss, H. (1983) Bicentric evaluation of a teaching and treatment program for Type 1 diabetic patients: Improvement of metabolic control and other measures of diabetes care for up to 22 months. *Diabetologia* 25: 470-476.
- Nagelkerk J., Reick, K. Meengs, L. (2006) : Perceived barriers and effective strategies to diabetes self-management. *Journal of Advanced Nursing*: 54(2): 151-158.
- NICE (2003) *Guidance on the use of patient-education models for diabetes* Technology Appraisal 60. National Institute for Clinical Excellence; UK.
- Norris SL, Lau J, Smith SJ, Schmid CH, Engelgau E.(2002) Self-Management education for adults with Type 2 diabetes; a meta-analysis of the effect on glycemic control. *Diabetes Care* 2002; 25:1159-1171.
- O' Donnell M, de Siún A, O' Mullane M, Dinneen S, Smith D, Bradley C, on behalf of the National Diabetes Registry Group (2009). A survey of adult outpatient diabetes care in public hospitals in the Republic of Ireland: preliminary findings. *Irish Journal of Medical Science*. 178(Suppl 10):P54.
- Paterson B. (2001) Myth of empowerment in chronic illness. *Journal of Advanced Nursing* 34 (5), 574–581.
- Piette JD, Schillinger D, Potter MB, Heisler M. (2003) Dimensions of patient-provider communication and diabetes self-care in an ethnically diverse population. *Journal of General Internal Medicine*. 18(8): 624-33.
- FF, Keller U. (2003) Quality of diabetes care: problem of patient or doctor adherence? *Swiss Med Wkly*. 2003;133:530–4.
- Rasmussen B. ., O'Connell, B., Dunning, T. and Cox, H. (2007) Young Women with Type 1 Diabetes' Management of Turning Points and Transitions. *Qualitative Health Research*, 17 (3): 300-310.
- Reynolds, F. (2004) *Coping with illness In Physiotherapy: a psychosocial approach* SalltFrench .& Julius Sim: Elsevier Churchill Livingstone Edinburgh Scotland.
- Sigurdardottir, A. & Jonsdottir, H.(2008) Empowerment in diabetes care : towards measuring empowerment. *Scandinavian Journal of Caring Science* 22: 284-291.
- Smith K & Biley F. (1997) Understanding grounded theory: principles and evaluation. *Nurse Researcher* 4: 17 30.
- Stamler, L. Patrick, L. Cole, M. & Lafreniere, K. (2006) patient perceptions of satisfaction following diabetes education: Use of the mastery of stress instrument. *Diabetes educator* 32(5): 770-776.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage.

Corbin, J. (2008) & Strauss, A. *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage.

Talavera, R. & Harrison, A. (2002) Patients' perceptions of diabetes self management and community resources, Paper presented at the *The International Society for Quality in Health Care* Paris France.

Turk, D. (1979) Factors influencing the adaptive process with chronic illness. In: Sarason IG, Spielberger, CD (Eds), *Stress and anxiety*. Vol 6. Washington DC: Hemisphere Publishing Corporation 1979, : 291-311.

Veg, A. Rosenqvist, U. & Sarkadi A. (2007) Variation of patients' views on Type 2 diabetes management over time. *Diabetic Medicine*. 24: 408-414.

Zoffman V. and Kikevold, M. (2005) Life Versus Disease in Difficult Diabetes Care: Conflicting Perspectives Disempower Patients and Professionals in Problem Solving *Qual Health Res*; 15: 750 – 765