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## Methodology and Therapeutic Education

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### Abstract

Patient Education in the field of Diabetes Care has been centred for many years on the health care provider's perspective. Recently more attention has been focused on the learner's point of view, that is how does a person learn meaningfully. Most guidelines on the management of type 2 diabetes include dietary modification and physical activity goals, but it is important to consider only the type of interventions that can make a long-term difference. Several key models have reasonable evidence for their effectiveness: cognitive behavioral, motivational interview, trans-theoretical model based on the stages of change, behavior change counselling, social learning theory and empowerment, although not all of them have been successfully tested in diabetes care. There are three areas to be considered when looking at the core requirement of an effective lifestyle modification program: the first is that the program must be integrated in routine diabetes care. The second is the philosophical approach adopted by the health care professional. The third is how you do it, focusing on importance, confidence and competence. In order to have people develop the life skills required to prevent complications we must recognize that giving information is not only a pot filling exercise. Collaboration with the patient is essential in setting any education program and initially the view point must be considered. The model of behavior change is described and further concepts of theory and practice are explored, focusing on the concepts 'learning and taking control', rather than on 'education and teaching'.

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We all recognize the gap between what could be achieved and what is actually achieved in diabetes care. Many people have tried empirically to change this issue. Most activities were centered on the needs of the health care providers. However, more and more awareness has focused on the learner's perspective – that is, how a person learns meaningfully.

## The 'Physiology of Learning'

Way before educational science was formed and became interested in adult education, the Swiss educator Heinrich Pestalozzi (1746–1827), gave the teachers of his time some recommendations that are still valid in the field of patient education [1]. They can be divided into six steps:

1. Show concrete examples before starting to speak
2. Start with the simplest facts, those closest and best known to the student
3. Progress from simple facts to more complex situations, taking great care not to jump too fast and miss the intermediary steps. To illustrate the notion of continuity, Henrich Pestalozzi took the example of the slowly progressive growth of an organism
4. Progress very slowly in order to avoid unnecessary tiredness or tension in the student
5. Foster personal work and creativity; through this you may encourage independence
6. Make links between what has been understood and practiced in a given field with other sectors of life where they can be of use. In doing so, you help the integration of the student into society

Educational development in the field of patient care in diabetes has followed two basic lines from the 1970s to the 1990s [2] (table 1). One is orientation towards content/description of what the patient has to do. The other implies a new relationship between the physician/nurse/dietitian and the patient. Listening to the patient's way of experiencing his disease, its treatment and promoting his understanding of it, becomes a main task [3].

Most guidelines on the management of type 2 diabetes incorporate dietary modification and physical activity goals, but it is important to consider whether there is any clear evidence that interventions delivered in a real-world context can make a long-term difference. The difficulty is that the vast majority of published psychological/educational interventions seem to take a quick-fix inoculation approach to lifestyle modification. That is, they provide relatively brief interventions that are supposed to change a patient's lifestyle completely. Unfortunately, we know this does not really work, as most people can stick to a diet for a short time, but then revert back to old habits [4, 5].

To achieve a sustainable change in lifestyle, a step-by-step approach is required. Only a small number of studies have delivered lifestyle modification over an extended period and as part of routine care, yet they do offer us some positive models to follow.

Recent publications demonstrating diabetes prevention in Finnish and North American patients with impaired glucose tolerance have demonstrated the potential benefits of lifestyle modification interventions, but there is scope

**Table 1.** Development of educational concepts in therapeutic education

1970s		1980s	1990s	
Educational orientation	Instruction information	Problem-oriented	Active learning	Deep learning based on patient's understanding
Art of knowledge	Medical facts on diabetes	Well-defined medical problems	Individual experience	Qualitative differences in understanding
Communicative competence	Authoritative, prescribing	Group discussions centered around teaching devices	Dialogue	Active reflection in the meeting with the patient
Role	Health care provider	Health care provider Instructor	Interactive teacher	Tutor

for further studies in type 2 diabetes [6, 7]. The United Kingdom Prospective Diabetes Study (UKPDS) of course demonstrated that dietary modification alone was not an effective long-term intervention for maintaining tight glycemic control, but this was also the case for sulphonylurea, metformin and insulin monotherapy [8]. However, it should be noted that in the UKPDS, diet modification was systematically applied only in the early stages, again following the inoculation model of lifestyle modification. Furthermore, and just as importantly, taking medication and monitoring diabetes need to be as much of a focus of behavior change approaches as should diet and exercise, given the well-documented low concordance rates.

The literature demonstrates that using a model will result in better outcomes than using nothing to guide educational intervention (at least in adolescence) but this has not been overtly tested in adults with type 2 diabetes [9]. Unfortunately, no head-to-head evaluations exist of different models that we are aware of. However, there are several key models which have accumulated reasonable evidence for their effectiveness (though not necessarily in diabetes): cognitive behavioral [10], motivational interviewing [11], trans-theoretical model (stages of change) [12], behavior change counseling [13], social learning theory [14] and 'empowerment' [15]. The first three of these models are quite complex, in that they require a specific set of techniques to be used, depending on the nature of the patient assessed and require a great deal of training to be delivered

effectively. The last three models share a great deal in terms of their underlying approach to the issue of lifestyle modification.

There are three areas to be considered when looking at the core requirements of an effective lifestyle modification programme. The first regards the programme: it must be integrated into routine diabetes care and be an ongoing process. Lifestyle modifications are usually only sustained if they are achieved in a step-by-step process, focusing on one or two steps at a time; thus, they take time and need continued support.

The second area involves the philosophical approach adopted by the health care professional. When professionals think they know what is best for patients – telling patients what to do and how to do it, anticipating patients’ barriers to change, attempting to tell patients how to overcome barriers – little change is achieved. In contrast, when professionals engage patients in discussion about their health – what patients want to achieve and how they want to achieve it – when they help patients explore barriers and support patients’ problem-solving efforts, then behavioral changes are likely to be favored. Getting patients engaged, involved and investing in their own diabetes care are the key issues.

The third area deals with how to go about this. Focusing on importance, confidence and competence is a good start. Exploring both your own and the patient’s views about the *importance* of diabetes control and lifestyle issues is essential. If it is not important, then no change will occur. Talking about complications and scaring patients is *not* a discussion about importance. To convince someone of the need for change, they need to understand how things like glycemic control, blood pressure and dyslipidemia are related to complications and how a different lifestyle may make a difference. It is very important to focus on possible or desirable elements of change. However, wanting is not enough; we need to support patients in turning desires into actions. This is where confidence and competence come in.

The historical management of type 2 diabetes starts with lifestyle modification, adding medication where necessary. The current evidence base does not provide clear support for this; furthermore, the historical approach gives other messages to the patient. He can gain the perception that type 2 diabetes is a ‘mild’ condition, especially when accompanied by similar messages coming from health care professionals and the culturally prevalent belief that theirs is not a *serious* condition. Moreover, the issue of failure on diet and exercise (or oral hypoglycemic therapy) can drive a whole host of negative beliefs about the self to the forefront and contribute to depressed mood, which is a major barrier to behavior change.

An individual decision also has to be made as to how long to attempt lifestyle modification before deciding it is not working, as well as how to determine it is not working. Otherwise, there is a risk of diabetes causing macrovascular and

microvascular damage, or the development of depression, thereby preventing lifestyle change. The beginning of oral therapy does not of course mean the cessation of lifestyle modification. There are a lot of conflicting and confusing explicit and implicit messages within these scenarios – even if just one health care professional is involved – without bringing in the multidisciplinary team.

The role of lifestyle modification and the aggressive treatment of glycemic control, hypertension and dyslipidemia in type 2 diabetes are thus not mutually exclusive, but complementary. The likelihood is that increasing numbers of patients will receive metformin, angiotensin-converting enzyme inhibitors and statins early in the course of their type 2 diabetes on the basis of large randomized controlled trials published over recent years; successful lifestyle modification thus incorporates diet, exercise and medications [16].

The key to resolving these issues is to be honest with the patients, curious about how they would like to manage things and respectful of their answers. The patients need to be helped to make informed choices about their condition, as they are ultimately the ones who are really in charge and in control of it, whether through action or inaction [17].

One of the main aspects of care in patients with diabetes is that of trying to establish good glycemic control and lifestyle behavior to prevent complications. To help people develop the life skills required to prevent complications, we must all recognize that giving information should not just be seen as ‘pot filling’. It is also easy to believe that once you have given somebody information, he or she will readily act on this information, but recent health promotion studies have clearly shown that this is not the case [6, 7].

It is important to focus any teaching on the patient’s agenda – identifying the patient’s needs and trying to motivate him or her towards turning those needs into the patient’s ‘wants’. Walker [18] suggested that meaningful education has to be learner-centered: this can be time-consuming, but it is time well spent in the long term. Collaboration (not coercion) with the patient is essential in setting out any education programme. Initially, the patient’s viewpoint must be sought – try to find out what he or she already knows about potential complications.

Any teaching should be suitable to the patient as an individual and this will require an in-depth assessment of personal needs. The patient must be able to understand and follow the education programme in order to succeed and therefore the health professional must regularly assess the progress of the patient’s learning, pacing the session and its content accordingly. Often people will experiment and, consequently, make mistakes as they learn. This is not to be seen as negative, but identified as normal; encouragement will help people understand that we all make mistakes; the important thing is to learn from them [17]. In fact, we often learn the most from our mistakes. Mistakes are frequently made in blood-glucose testing, perhaps because initial teaching was inadequate.

It is vital that people be taught the correct way confidently, with no blame being attached. It is easy for health professionals to make some patients feel guilty.

Where to teach somebody can be important, although if the learner really wants to learn, location appears to be unimportant. Ideally, any environment that is conducive to learning will be relaxed and comfortable – the patient will ‘want to come here’. While it is common for doctors to wear uniforms and sit behind a desk, there may be times when this is inappropriate. If the desk or uniform is a barrier, a skilled teacher can overcome this. Any teaching/learning environment needs to be established within an open and honest relationship, with health professionals recognizing that they may not know all the answers. If they are ready to give advice, then they should be as up-to-date as possible. The development of training programmes from local specialist diabetes teams can sometimes assist with these skills.

Any goals that are jointly set with the patient must be achievable (within reach of the patient). This has been shown clearly to work, for example, in achieving some weight loss. If a target is set that is too great to achieve or that will take too long to achieve will be very difficult for that person to succeed in accomplishing. Goals should be set so that short-term success is obtainable [17, 18]. Small triumphs will motivate patients to move on to further goal-setting. At the end of each education session, it is vital that both parties evaluate what has happened so that progress can be monitored and achievements assessed. This is an ideal opportunity to allow for the repetition of any information necessary.

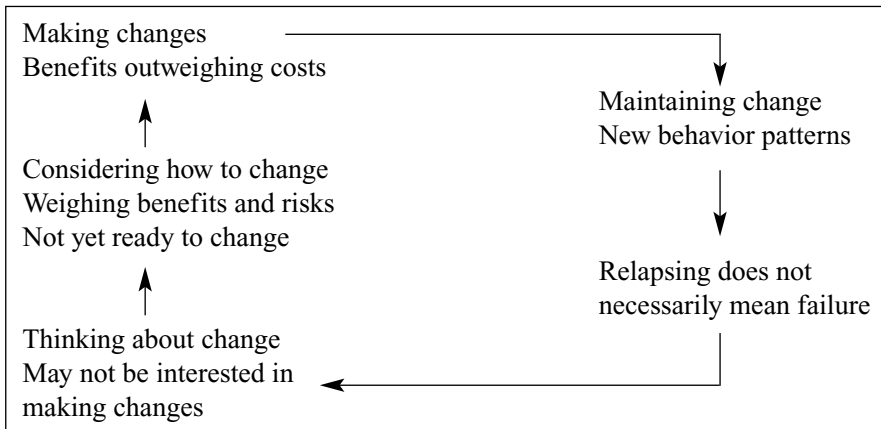
### **Behavior Change**

While trying to encourage patients to make changes, it may be difficult to understand just how well a patient is doing. A model of change can be of help in understanding that people go through various stages toward achieving change and, while relapse may occur, it should not be seen as failure [19]:

- *Pre-contemplation:* The person is not interested in changing a ‘risky’ lifestyle. He or she may be unaware of the risks being run.
- *Contemplation:* Once aware of potential risks, an individual may start to think about making changes.
- *Action:* When the possible benefits of change are seen, the individual prepares for change, often needing extra skills and support. Initial changes tend to require positive decisions; clear goals and achievable plans are necessary for success at this stage.
- *Maintaining change:* Once changes are made, the individual has to adjust to a new behavior. Occasionally, maintaining this new behavior is difficult, requiring constant support to avoid ‘relapse’.

- *Relapsing*: Relapse is normal and should not be seen as failure (for patient or helper). Assistance can then be provided to move once again into the contemplative stage.

This model has been adapted locally for use with people who live with diabetes, using a ‘five-phase’ structure. During each phase, individuals go through the ‘change process’. Once individuals are maintaining changes and are prepared to make further changes, they will progress to the next phase.



This model describes what happens to people as they change in everyday life, where people have different needs and they do not need the same kind of help. Unfortunately, too many Diabetes Centers have been action-oriented, revolving around the small percentage of people who are ready to take action, typically less than 20% [19].

## Concepts for Theory and Practice

### *Learning*

By focusing on the concepts *learning* and *taking control*, rather than on *education* and *teaching*, we wish to move the focal point of learning from ‘the teacher who teaches’, to the processes that take place in ‘the pupil’ and the interaction between ‘teacher’ and ‘pupil’.

Learning is an individual process that takes place in each and every person, arising from the interaction between individual experience and new knowledge. This invariably means that no one can learn from you; each person must learn for him/herself.

Health care professionals who want people with chronic diseases to learn about their own disease and take responsibility for it must remember that learning does not automatically take place just by telling the ‘patient’ something. What health care professionals *can* do is to prepare the terrain so that useful and permanent learning can take place. This entails ensuring that what is to be learnt is capable of differentiation and individualization. It is useful to know what the person who wants to learn already knows and which strategies toward attaining proficiency he normally uses. New information can be more easily understood on the basis of knowledge already acquired.

The aim of learning is to give people with diabetes the opportunity to be less dependent upon the health providers and more self-reliant.

### *Teaching and Education*

*Teaching* is a social process that takes place between two or more individuals. Upon hearing the concept *teaching about chronic diseases*, many people think of a doctor or nurse telling the person with the chronic disease how their life must be lived. At best, teaching will lead to learning, but this is not inevitable. Once again, it must be pointed out that if teaching is to impart learning, the person with the chronic disease must ‘get out there’ and take responsibility for his own learning.

*Education* is a concept close to teaching. For some individuals and in some situations, these concepts are synonymous. It may be true to say that to educate someone requires more from the teacher than just teaching.

### *Instruction and Information*

Instruction can be used to demonstrate the correct way of performing a particular skill. The person who is being instructed can then try it himself and get expert help to get it right. Instruction is also described as copying an action. The idea of *copying an action* may sound a bit defensive and passive. Instructing people on how to measure blood-glucose, administrate and inject insulin must not only involve blind copying, it must also confirm that learning has actually taken place [3].

Instruction and information are sometimes used as synonymous concepts. Both instruction and information can be conveyed through written material. Information is distinguished from instruction, in that knowledge or guidance is a one-way process. Health care professionals inform users about, for instance, the consequences of diabetes. The information is given on the basis of experience and accumulated knowledge and, for the users, appears as more or less convincing. One-way information does not necessarily lead to learning and a change of behavior in the recipient, but it may do so. Whatever learning information may

have bought about in the recipient can, if necessary, be verified by asking the person questions.

### *Guidance*

Guidance is often defined as help for self-help. One of the conditions for successful guidance is that there exist a relationship of trust between the guide and the guided. In this way, confidence in the situation can be created. The basic skills a guide should have are related to listening and empathy – specifically, the ability to understand the other person’s experiences. In addition, it is also essential that the person who is being guided feels that he is understood.

In the guidance of people with diabetes and other chronic diseases, it is important to have as a basis the person’s own understanding, experiences and ethical values. As a guide, your task is as much to ask the right questions as it is to give the right answers. Being a good listener gives you the chance to pick up on problems that need to be discussed further. One of the greatest challenges for guides is to get individuals to present what he/she wants or needs to discuss or find an answer to.

The aim of guidance is to render people with a chronic disease more self-reliant, less afraid to take responsibility and more confident in making decisions on the basis of their own experience and knowledge.

### *Taking Control*

The concept of *taking control* is both difficult and comprehensive. It can mean ‘to be a master over someone or something’. The concept of *strategy for mastering* suggests that it pertains to a struggle where the idea is to act wisely in order to win.

*Taking control* is not a phenomenon restricted to people with chronic diseases. On the contrary, it is a common concern of mankind that can be found in all spheres of life. What is special – in the case of taking control of a chronic disease such as diabetes – is that without having chosen to, one is placed face- to-face with health problems that can have grave consequences if they are not properly treated. The regulation of diabetes has a clear-cut technical and medical side that must be controlled. Permanent, serious health problems also carry an emotional and existential burden that must be continuously addressed. In social interaction, great demands are placed upon somebody with a chronic disease if he is to avoid stigmatization, prejudice and rejection. Traditionally, health care professionals have focused more on technical and medical challenges than on the psychological and social conditions for taking control. It is the case, however, that good-quality results from medical treatment are very difficult to achieve if problems in other spheres of life require excessive attention and energy.

In modern research concerned with ‘taking control’, attention has turned away from actions and strategies that create problems and diseases, focusing on strategies that promote advances in quality of life, well-being and health. In relation to diabetes this means that health care professionals and patients need to cooperate to find the tools patients need in order to live life on their own terms. General recommendations for treatment characterized by prohibition and limitation often promote nothing more than protest and neglect, while individualization and self-determination encourage initiative and positive lifestyle choices [3, 17, 18].

### *Learning by Doing*

This concept is frequently used to describe learning that takes place when we do, perform, experience or practice something. It is often ‘silent’ knowledge we acquire in this way. We can repeat something we have learned. This is a prevalent method in learning about diabetes. Combined with theorizing and summarizing, preferably with a guide, this can be a very useful method with which to acquire everyday knowledge.

### *Learning by Imitation*

This is a method whereby knowledge is conveyed by other people’s behaviour. Other people are seen as positive or negative models or ideals that can be copied. Parents are often models for their children, whether they want or do not want to be so. When it comes to learning about diabetes, people with experience can act as models, consciously or unconsciously. Everyone needs models and ideals. There is therefore no reason to avoid the conscious use of models and ideals in relation to diabetes.

### *Trial and Error*

This concept describes learning that takes place when one attempts to do something new and learns from the experience. One learns by trial and error. There is good reason to ask what one actually learns by making mistakes.

Another angle on this can be to gain personal experience within areas where one is more likely to succeed. This can be described as ‘trial and taking control’ instead of trial and error. To succeed can be inherently motivating and stimulate the inclination to try again. A strategy such as this necessitates a highly adapted and organised situation.

### *Motivation*

Motivation is often a key factor in learning. We say that someone is motivated or that someone is not motivated. For those who desire to optimize an environment for learning, motivation is important. We can comprehend the concept of motivation through the word ‘motive’, as in the motive for

an action. An example of this might be ‘hunger’ which gives rise to the motivation to find food. We often speak about the ‘pleasure’ of learning or the lack of it. When someone has the inclination to learn, they have a need for learning. The challenge of motivation in regard to education – learning and teaching – is that the ‘teacher’ is convinced that the ‘pupils’ have a need to learn, but the ‘pupils’ do not share this conviction. The art of motivating people toward learning is all about stimulation; influencing the emotions and the mind to discover and acknowledge a need to learn. The aim is to create curiosity and eagerness to learn by helping participants discover their own need to learn. There are various suitable methods and techniques. The simplest frequently consist of being inquisitive – being interrogative instead of narrative. To query what one wants to learn more about, to let the participants take part in defining their learning needs and the form of tuition often stimulates the appetite for learning.

A deeply oriented approach to learning could be described this way: ‘In order to help a patient to learn, the health care provider has to give him only a few facts, those truly indispensable for daily treatment, and to ask the patient to solve some simple problems, let him make all sorts of comparisons with other situations and be quite happy about errors, all of which may well represent the ideal way to help patients learn, providing that primary attention is given to the causes of errors.

### **Health Care Professional Burnout**

Successful diabetes management involves individualized self-care goals, persistent problem-solving efforts based on specific problems encountered by the patient, and ongoing provider support. These behaviors require time, perseverance, enthusiastic endorsement and flexibility in adapting to the individual needs of each patient. Despite concerted effort, treatment outcomes often fall short of the expectations of providers. Feelings of disappointment, frustration, and failure can lead to provider burnout [20].

Burnout is a physical and psychological response to chronic job stress factors that occurs primarily in the care-giving, helping, or people-oriented professions [21]. Chronic job stress factors often involve: (1) unrealistic expectations and demands (2) non-reciprocated care-giving in emotionally draining, stressful situations. Definitions of burnout include negative changes in provider attitudes and behaviors as a result of chronic interpersonal and emotional stress at work [20–22]. Sample definitions include:

- A state of physical, emotional, and mental exhaustion
- Progressive loss of idealism, energy, and purpose

- Feelings of helplessness and hopelessness, emotional drain, negative self-concept and negative attitudes toward work, life and other people
- The depletion of one's physical and mental resources...by excessively striving to reach unrealistic goals imposed by oneself or one's society

Provider burnout generally results in a lack of provider energy and the inability to respond effectively to the demands of the job [20, 22].

Provider burnout usually involves one or more of the following three characteristics:

- Emotional exhaustion
- Depersonalization
- Reduced personal accomplishments

Emotional exhaustion means being emotionally overextended and depleted. Providers who work overtime and have overly excessive time demands are more likely to experience emotional exhaustion. Providers who are emotionally exhausted may try to reduce or minimize contact with patients. Many dysfunctional emotional patterns, such as frustration and irritation, can develop. Provider frustration and irritation with patients can result in provider-patient distancing.

Depersonalization is a term that is used to describe the impersonal and insensitive responses of providers who develop burnout. Providers may become disengaged from and insensitive to patients, particularly when patients are experiencing failures and difficulties, which is, unfortunately, precisely when patients' needs are highest. This distance in the patient-provider relationship increases feelings of failure for both parties. Patients need to feel accepted and supported, especially when they have failed to meet both their own and others' expectations. Failing within a supportive environment is an important part of patients' acceptance of themselves and promotes continued efforts towards self-management. If people feel supported and encouraged when they are unsuccessful with self-management techniques, they can recover quicker and feel stronger than before. Provider burnout inhibits the recovery process [22].

Providers may develop the attitude that patients do not want to get well or help themselves. Unless there are serious problems with low self-worth and depression, patients desire health, well-being and control over their lives.

A sense of incompetence, feelings of failure and lack of job satisfaction can further escalate the burnout process.

Little research has been conducted on burnout among providers who care for people with diabetes, but some predictors seem to emerge. Provider burnout results from a combination of factors that interrelate with each other in complex ways [21]:

- High job-related stresses (e.g. overcommitment, lack of staff support, inadequate funding and institutional support, low control over work demands, lack of job security)

- Low satisfaction in work and interpersonal relationships (e.g. dissatisfaction with workload, emotional exhaustion, poor relationships with colleagues and staff, low support from family and friends)
- Care-giving to patients with chronic or severe debilitating problems (e.g. cancer, AIDS, victims of abuse, chronic disease)

The individuals most susceptible to burnout all have a common characteristic: they give much more of themselves than they receive in return [23].

For providers who care for patients with diabetes, burnout is more likely to develop when:

- Unrealistic patient and provider goals and expectations have been set
- A consistent and positive approach toward the patient has not been used by the provider
- Too much responsibility for ongoing patient support and problem-solving has been undertaken by the provider, rather than using support systems in the patient's life and community
- Appropriate referrals and resources have been under-utilized

It is important that health care providers understand the burnout process by analyzing the problems of solitude and the lack of recognition of the value of professional work. Strategies for early recognition of possible victims of this syndrome must be set in health institutions, especially those dealing with chronic diseases.

### **Team Approach for Diabetes Management**

The interdisciplinary, integrated care team as a model for the treatment of chronic illness is not a new concept. Its benefits have been supported in the treatment of a variety of disorders. Adoption of this model is relatively new to diabetes, however, and requires a shift in how diabetes providers view their roles and relationships, both with patients and with professionals in other disciplines [24].

The interdisciplinary, integrated diabetes treatment team includes physicians, nurses, dietitians, and sometimes behavioral scientists with special interest and training in the management of diabetes.

The team may also extend to health care professionals who can help meet special or specific needs within the scope of the core team's expertise. Podiatrists, exercise physiologists, ophthalmologists, pharmacists, specialists in maternal-child care and gerontologists may all have a place within the diabetes care team.

The existence of a diabetes care team implies the development of a comprehensive diabetes care program ensuring that standards of care are met. Care should be research-based and outcome-focused. Mutual support of team members will encourage ongoing professional development.

Integrated care is defined as patient-centered and goal-directed, with equal emphasis given to education, counseling, and medical treatment. Key elements of the interdisciplinary team's action include shared leadership with common goals, shared professional identity and collaborative, rather than consultative, relationships among members.

Interdisciplinary care requires changes in team organization. In traditional medical models of care, the roles of team members and the work performed by each member are defined by the physician. The interdisciplinary model demands a shift toward shared leadership, which promotes mutual problem-solving, open communication and team cohesiveness. Undoubtedly, most organizations will still be inclined to identify a physician as team leader, but the nature of that leadership role must evolve away from the traditional physician leadership role.

The responsibilities of diabetes nurse clinicians include but need not be limited to providing diabetes education, assisting in the choice of insulin regimen, adjusting insulin dosage, teaching patients problem-solving skills, helping patients work through self-management problems and developing educational and motivational strategies to promote patients' self-management.

The role of dietitians goes beyond the identification of an appropriate meal plan. Working individually with patients to design meal algorithms, dietitians highlight appropriate, realistic nutrition and exercise goals, negotiate dietary strategies and provide ongoing patient support, tailoring programs to meet patients' specific lifestyle and motivational needs.

A team is a group of individuals with similar interests and different areas of professional expertise. In interdisciplinary care, members share a common professional identity as part of the team, as well as a common purpose.

Sharing a common professional identity does not suggest that members give up their unique contributions as physician, nutritionist, nurse, or behavioral scientist. Rather, all members bring specific expertise and a valuable point of view to the group. There is a great need for tolerance and the encouragement of flexible roles within a team. Collaborative practice allows the matching of provider expertise and style to specific patient needs and goals.

If optimal glucose control of a patient's type 2 diabetes is achieved through diet alone, then the dietitian could be that patient's primary provider. In this scenario, the dietitian would be responsible for assuring that all standards of diabetes care for that patient are met, for coordinating the appropriate referrals to do so, and for providing expert advice on dietary intervention for diabetes self-management [24].

Similar beneficial effects of an integrated, interdisciplinary approach to chronic disease management have been demonstrated with conditions other than diabetes. These include but are by no means limited to chronic pain, rheumatoid arthritis, chronic fatigue syndrome and mental illness [23].

## **Patient-Education Models for Diabetes as Recommended by the National Institute for Clinical Excellence (NICE)**

It is recommended that structured patient education be made available to all people with diabetes at the time of initial diagnosis and then as required on an ongoing basis, based on a formal, regular assessment of need. There is insufficient evidence currently available to recommend a specific type of education or to provide guidance on the setting for, or frequency of, sessions. However, to achieve maximum effectiveness some principles of good practice are clear:

- Educational interventions should reflect established principles of adult learning
- Education should be provided by an appropriately-trained multidisciplinary team to groups of people with diabetes, unless group work is considered unsuitable for an individual
- Sessions should be accessible to the broadest range of people, taking into account culture, ethnicity, disability and geographical issues, and could be held either in the community or at a local diabetes center
- Educational programmes should use a variety of techniques to promote active learning, engaging individuals in the process of learning and relating the content of programmes to personal experience. Programmes should be adapted wherever possible to meet the different needs, personal choices and learning styles of people with diabetes, and should be integrated into routine diabetes care over the long term

Multidisciplinary teams providing education should include at least one diabetes specialist nurse (or a nurse-practitioner with experience in diabetes) who has knowledge of the principles of patient education and a dietitian. Although not formally assessed in this appraisal, input from other disciplines, such as podiatry, has potential value. The composition of the team and the way in which members interact may vary between programmes, but team functioning should be tailored to the needs of different groups of people with diabetes.

### **Education Is as Important as Insulin, Oral Drugs and Proper Food for People with Diabetes**

Therapeutic education of people with diabetes should preferably be an active process run by the people with diabetes themselves. They should learn about diabetes for their own survival, rather than be taught by health professionals. Active learning processes are facilitated by using problem-based learning processes, by interactive educational methods, by group teaching, by emphasizing practical aspects and by being concrete rather than abstract.

In a chronic disease like diabetes, the aim of the learning process is to empower the person with diabetes to make his own decisions and to make him independent of the healthcare system, using it for advice rather than for care and instruction. Active learning should be preferred to passive teaching.

The 'golden moment' of education is when the person with diabetes has a problem, contacts his adviser, discusses the problem and, together with his adviser, finds a solution which is then found to work. Availability is therefore an essential part of diabetes healthcare delivery [25].

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