

The Role of Group Care in the Management of Type 2 Diabetes

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Abstract

'Group Care' is a clinical pedagogic model aimed at offering continuing structured education and care to people with diabetes. The hypothesis is that patients are best helped to become self-sufficient and self-reliant, and consequently to improve clinically, by seeing them in groups rather than using the traditional one-to-one approach. The Group Care programme is articulated over seven sessions held over two years, with one session every three months, which can be repeated *ad libitum*. Each session lasts up to one hour and methodologies facilitate learning through cognitive and psychomotor abilities such as simulations, role-playing games, debates, workshops and working groups. A pragmatic randomised, controlled clinical trial proved that Group Care improves knowledge of diabetes, health behaviour and quality of life along with bodyweight, glycated haemoglobin (HbA_{1c}) and high-density lipoprotein (HDL) cholesterol. In addition, Group Care encourages team work by motivating health operators and helps empower patients and build strategies enabling them to cope with diabetes.

Keywords

Type 2 diabetes, patient education, diabetes management, health behaviours, quality of life

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Increasing evidence supports the pivotal role of health education in preventing and treating diabetes more effectively.^{1,2} The World Health Organization (WHO) Regional Office for Europe officially acknowledged in its 1980 and 1992 reports that education should allow patients to acquire and maintain the ability and skills necessary to live a fulfilling life with their disease, and the results of the UK Prospective Diabetes Study³ and Diabetes Control and Complications Trial⁴ further support its importance. Education must take into account the process of coping with the disease, the 'locus' from which diabetes is controlled and the objective and subjective needs of patients, be they stated or unexpressed. J Dewey said that education has to "foster the liberty of the human personality", and health education should reach that goal too.

In 2005 the UK Department of Health and Diabetes developed a set of criteria for structured patient education in type 2 diabetes.⁵ Some recent systematic reviews and meta-analyses on the effectiveness of self-management education in type 2 diabetes^{6–9} have shown, among other points, that one critical issue is sustaining the educational input, as patients may improve their glycated haemoglobin (HbA_{1c}) over the first three months following the end of education but then slip back to previous levels unless the educational programme is sustained. Consequently, structured education should be offered to patients at the onset of diabetes and then continued for the rest of their life. A good example of the former is provided by the Diabetes Education for Ongoing and Newly Diagnosed (DESMOND) programme^{10,11} recently completed in the UK in people with newly diagnosed type 2 diabetes, who were offered special education sessions aimed at improving diabetes self-management skills and encouraging appropriate

lifestyles. With Group Care, we aimed at developing a model that would make education the core of continuing diabetes care.

The Group Care Model Observation Stage – The Waiting Room

In January 1996 we started a randomised controlled clinical trial to test a new concept of educational and clinical care for patients with type 2 diabetes. We called it 'Group Care' to stress that:

- providers must relentlessly focus on taking care of people with diabetes to help them become self-sufficient and self-reliant; and
- this is best achieved by seeing patients in groups rather than using the traditional one-to-one approach.

The trial was preceded by a large amount of preparation work. MT, a psychopedagogue, had joined our group three years previously and decided to start by observing the clinical setting from a patient's point of view. Hence, she spent six months in the waiting room, pretending to be a patient and listening to and keeping records of other patients' opinions, feelings, fears and beliefs. This enabled her to capture personal remarks and find out widespread health beliefs, realising that patients have different ways of talking about their disease and that every single word conceals common traditions, beliefs, habits and experiences. Conversations showed that patients were afraid of diabetes and perceived it as something nasty. Possibly, incorrect or worrying information about diabetes had been delivered to them by some of those operators, physicians and nurses, who are used to openly criticising their patients and justify this behaviour as a way to 'motivate' them. However, patients do not always understand their physician's criticisms, nor do they agree. Indeed, the attitude of 'motivating

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people by blaming them' is based on an incorrect understanding of the human psyche. Human beings tend to ignore information and knowledge that contradict their behaviour whenever they realise that it would be too difficult to change their ways.¹² This is known as 'cognitive dissonance'. Our intention was to find a way to combine the clinical needs of health professionals with the personal needs of patients.

Observation Stage – The Medical Practice

In the following six months, MT moved to consulting rooms and could listen to physician-to-patient conversations.

Diabetes is a chronic disease, and patients need to change their lifestyle, eating habits, beliefs, convictions and traditions. This requires a long time, a shared set of ideas and a terminology that should be well-known to both patients and physicians. Using technical words or focusing on the negative effects of a disease leads to ineffective care and may have deleterious consequences. It is like people talking different languages: different meanings are given to words and notions. Many of our patients had left school when they were 11 years old and some were functionally illiterate. However, that led us to realise that every person has potential to unleash and that education must focus on everyday personal experience to exploit such potential. One aim was to help all patients to understand and share their physician's point of view.

Although considered an effective instrument to treat diabetes,¹³ until this stage education had been offered in such a way that long-lasting lifestyle changes could not be attained. Teaching sessions were concentrated on 'intensive courses' lasting one to a few weeks. Patients were usually overwhelmed with information and technical terms but, once the full immersion was over, feedback or further support were rarely provided. In addition, teaching objectives and methodology were often not specified and effectiveness was not assessed.¹⁴

Having gained insight into the understanding of diabetes among both patients and health workers, we developed a patient-orientated approach to education in which we would:

- establish working groups with shared methods and goals;
- listen to patients without prejudice;
- foster people's self-confidence using a dynamic interaction process;
- improve human relationships, not only between patients and health providers but also between the different members of the diabetes team;
- set goals and deadlines; and
- create a monitoring and evaluation system to assess the intervention.

Continuity in care and education was required, and health workers had to change their work procedures and thinking.

The Syllabus of Group Care

The Group Care programme is articulated over seven sessions:^{15,16}

- Session 1: 'The story of a backpack and a bowl... or our bodyweight.'
- Session 2: 'A menu. Or the way we eat.'
- Session 3: 'Something more about eating. Cook a better meal.'
- Session 4: 'Let's go shopping. Choosing food.'
- Session 5: 'HbA_{1c}... How is your diabetes doing? Control and check ups. Keeping fit.'

- Session 6: 'Which tablet is best? Diabetes and hypoglycaemia: treatment.' and
- Session 7: 'Eyes, heart, blood pressure, kidneys and feet... Talking about complications.'

The educational and health objectives pursued during the sessions are as follows:

- Session 1 focuses on the connection between eating habits, bodyweight and diabetes.
- Session 2 further analyses the links between eating habits and diabetes. Patients are asked to select a dish from a restaurant menu in order to start understanding their eating needs and beliefs.
- In session 3, patients simulate cooking the best and worst possible meals.
- During session 4, patients do 'their shopping'. They choose food items and explain why. Patients' choices are discussed and assessed within the group.
- Session 5 is based on understanding the link between diabetes control and individual lifestyle. HbA_{1c}, physical exercise and regular self-monitoring of blood glucose are the main topics discussed during this session.
- Session 6 highlights the importance of regular check-ups and supports the patients in understanding and following the most suitable treatment.
- In session 7, patients are taught how they may prevent complications. We left this subject to the last session to reduce anxiety and highlight the role of healthy behaviours.

The Methodology of Group Care

The seven sessions are held over two years, one every three months, and the cycle is repeated *ad libitum*. Each session lasts no longer than one hour to avoid loss of concentration, and methodologies focus on facilitating learning through cognitive and psychomotor abilities (simulations, role-playing games, debates, workshops and working groups). An educational support kit was patented, and includes plastic models of ordinary food items (such as fruit and vegetables, meat, fish and pasta dishes, bread, cakes, milk, sugar, wine, beer and oil), graduated containers, tools relevant to foot care (appropriate and inappropriate shoes, detergents, nail scissors, etc.), an eye model, a heart model and a simple, captivating information booklet. An operating manual describes in detail how to use the teaching aids and how to organise the sessions. The order of the sessions is structured to help people learn a bit at a time, progressively and effectively (as shown by the trial results), and become willing to change. Each session includes various approaches

Welcome

Patients get to know each other and are welcomed to the group. Health workers can make their role clear and help patients to identify the learning objectives and the overall educational programme.

Teaching

A combination of teaching methodologies (active involvement, the right to make mistakes, continuous feedback, etc.) takes into account individual learning paces and approaches.

Real-life Situations, Metaphors and Problem-solving

Technical words such as 'calories', 'glycated haemoglobin' or 'sensitivity of nerve endings' are replaced by pictures, metaphors and

examples that give patients a tangible representation of difficult pathological concepts.

Metaphors are captured by the right brain hemisphere and turn complex ideas into something simple because their analogical language is ancient and more accessible. Some health workers find it hard to resort to metaphors, whereas patients appear to appreciate them very much. For instance, patients like the backpack metaphor in session 1 because it is straightforward and 'breaks the ice'. A mountain backpack is filled with four 5kg sand-bags and, by carrying it on their shoulders, patients get to feel the meaning of excess bodyweight. Patients can then 'gain' or 'lose' weight by adding or taking sand-bags out of the backpack. Over the years, the backpack has taken on additional meanings, such as the burden of disease and the sense of doubt.

We also use problem-solving techniques. Problem-solving refers to all intellectual functions necessary to analyse, revise and solve problems. It forms part of thinking and occurs whenever somebody tries to move from a given state to a different, usually desired, state.

Role-playing requires patients to act out a role and is used to simulate everyday life. For instance, in session 2 patients pretend to be in a restaurant choosing from a menu. The game helps patients and their health workers become aware of what they actually eat during the day and in what amount. The exercise is also useful to correct right and wrong beliefs about dietary restrictions. In another role-playing technique, patients are not required to act but simply to use their imagination to simulate daily episodes. This is done in sessions 3 and 4, when patients are required to think of what they would buy and cook for a friend or relative they have invited for dinner.

A scale of colours (red/yellow/green) is used to help patients evaluate their food choices (see *Figure 1*). The code is based on the traffic light metaphor. Green stands for low-calorie foods that can be eaten almost without limitations (vegetables, most fruits), yellow means 'be prudent' (bread, pasta and most carbohydrates, meat, fish) and red means 'stop!', or 'be extremely careful' (fat, sugary and hypercaloric food in general). By matching the food items they have 'bought' with the red, yellow or green segments of a food pyramid, patients realise what 'colour' characterises their eating habits without feeling criticised by other people in the group (see *Figures 2–4*).

In session 5, to explain HbA_{1c} we use red plastic bowls (representing the human body), white table sugar (representing blood glucose) and little pearls of red plasticine (representing the blood cells). By rolling the 'red cells' in bowls containing different amounts of sugar, we represent the formation of the glycated adducts of haemoglobin without having to explain the biochemistry. Again, words are associated with tangible objects and patients understand that it takes weeks to months for HbA_{1c} to reach the levels measured in their blood. Many questions about diabetes control are asked during this session and a new and deeper level of understanding is usually achieved. We get feedback that the use of analogical language makes a complex idea easy to grasp by the patients when they stop asking about their blood glucose and enquire about their HbA_{1c} results instead. Patients discover that their behaviour may influence HbA_{1c} and realise that they can play an active role in managing their disease appropriately.

Figure 1: The Colour Code and 'Traffic Light' System to Select Food Items (A) and Feedback – Choice of Plates According to Colour Code (B)



Session 6 focuses on pharmacological treatment and hypoglycaemia. Over the years we have divided right and wrong health behaviours into 'things to do' and 'things not to do'. Although apparently oversimplified, this categorisation allows us to talk straight. As a result, we found that patients sometimes swap their tablets with those of other patients or give up treatment altogether without telling their physician. One should not be surprised or offended by this: it is by learning about patients' inappropriate behaviours and letting them decide when to disclose their mistakes that we can help them. During session 7, we provide suggestions on appropriate behaviours to feel healthier. Patients with diabetes do not feel different from other people and often find out that they can look after themselves better than others do.

The focus of Group Care is on social implications, as patients discuss what it means to be affected by diabetes and to what extent the disease influences their human relationships. Each patient decides when to speak and what to say, the main objective being to share experiences. Diabetes should not mean solitude or marginalisation. Personal experiences are worthwhile and useful. Sharing them with others releases patients from the fear of solitude or social exclusion.

The Use of Time

Time is a resource, but no doubt one of the topics most feared by health workers, as we often hear them say 'We don't have enough time!', 'What can we achieve in so little time?' and 'If I had more time, I would manage to...'

Figure 3: 'Cooking' the Best and Worst Possible Meals



Figure 4: 'Shopping' for the Best and Worst Food Items



Figure 5: Group Discussion and Problem-solving



One reason Group Care sessions are held every three months is that they have to fit into the clinic routine. Presumably, Group Care has been so successful because of its continuity. Indeed, time has made possibly significant improvements in quality of life and clinical care.

Health workers involved in Group Care tell us that the first two-year cycle of seven sessions is only the beginning: an occasion to find out patients' doubts and uncertainties. Only during the following rounds do patients start to participate more actively and to ask more and more relevant questions.

Patients involved in Group Care perceive time in a different way. They do not live and learn just for today, they do not just spend time with each other, but try to spend their time for changing and guilt removal. Relationships and knowledge grow with time, and personal experiences shared within the group become a key learning instrument. Usually, high drop-out rates are reported among patients who attend education sessions held too close to each other over a short time. Attending too many sessions may become a burden for patients annoyed by having to see a physician too often. With Group Care, we wanted to help people live their lives without strengthening the ties with the clinic too much. It was the only way to get back to that genuine meaning of 'time': to live and change. The patients responded enthusiastically as they felt they were learning something useful.

The Research Project

We intended to design an intervention that health workers could easily put into practice to offer effective care and education to patients with a chronic disease. To prove that Group Care was not inferior to the traditional approach, we designed a pragmatic randomised, controlled clinical trial.¹⁷⁻¹⁹

Study Design

Patients were assigned to group or individual care by randomisation, the only exclusion criteria being age over 80 years, having attended our clinic for less than one year and being on insulin treatment. Fifty-six non-insulin-treated patients with type 2 diabetes were divided into groups of nine to 10, the composition of which remained unchanged throughout the study. The control group consisted of another 56 patients who continued their individual consultations. A considerable proportion of the patients had received low levels of schooling and were elderly, pensioners and housewives. None of them had ever received structured and continuous diabetes education before.

Bodyweight, blood glucose levels and HbA_{1c} were measured every three months, on the occasion of the group or individual sessions. Screening for complications was carried out once a year to measure total and high-density lipoprotein (HDL) cholesterol, triglycerides, full blood count, microalbuminuria and blood pressure and to examine the retina and feet. All results were checked by a physician before beginning group education, and after each session patients could ask to see the doctor for an individual consultation, if they wished. Control patients received individual education tailored to their needs, and these interventions were recorded in their files.

On top of the above clinical variables, over the five years of the study quality of life, knowledge of diabetes and health behaviours were analysed by specific validated questionnaires.

Results

Group Care proved to be feasible and cost-effective. Knowledge of diabetes kept increasing throughout the observation period among the patients randomised to Group Care, and this occurred more rapidly over the first two years. By contrast, patients receiving traditional one-to-one care tended to gradually reduce their knowledge. Items that were mostly not modified by either intervention were technical and theory-based. Patients receiving Group Care improved their scores on the practical questions but also on some of the more academic ones.^{17,18} Health behaviours followed a similar pattern, suggesting that problem-solving ability had already improved significantly after the first year and was still rising at year five. The improved areas included

assuming treatment properly, recognising symptoms of poor control, preventing acute and chronic complications, controlling bodyweight, food choices and smoke cessation. Problem-solving ability correlated with baseline schooling levels. Control patients, by contrast, exhibited gradual worsening in their problem-solving ability, starting from year three. It took two years for quality of life to improve in the patients managed by Group Care. This variable worsened significantly among controls, also from year two. HbA_{1c} progressively increased over five years among controls (+1.7%, 95% confidence interval [CI] 1.1–2.2) but not among Group Care patients (+0.1%, 95% CI -0.5–0.4), in whom body mass index (BMI) decreased (-1.4, 95% CI -2.0 to -0.7) and HDL cholesterol increased (+0.14mmol/l, 95% CI 0.07–0.22).

In multivariate analysis, Group Care *per se* was the major factor associated with improved knowledge, health behaviours and quality of life, entered as dependent variables (all *p*<0.001). The effect of Group Care was independent of schooling, age, duration of diabetes and years of attendance at our clinic. Knowledge seemed to act as a determinant of health behaviours in Group Care patients but not in controls receiving individual care. On the other hand, neither variable influenced quality of life in either group, suggesting that the effect of what is learned on diabetes and how it is put into effect is not sufficient to improve quality of life. Finally, modifications of the clinical variables did not correlate with knowledge, health behaviours or quality of life. The difference in HbA_{1c} between patients on group and individual care remained associated with treatment modality also after adjusting for changes in BMI. Finally, Group Care appeared to motivate not only the patients but also health operators, in particular nurses and dieticians, hence encouraging team work.¹⁹

Conclusions

According to Knowles's andragogy theory,²⁰ adults learn new notions if the teacher takes into account their personal experience and responsibility in making autonomous decisions, the notions help them cope with real-life situations and respond to internal motivations. By contrast, adults will resist new concepts if they clash with established habits and experience.

It is often repeated in the literature that new models should be developed to empower patients and build strategies that enable them to cope with chronic diseases.^{21,22} We suggest that managing type 2 diabetes by systemic education-based Group Care represents one such model. Individual visits can be substituted by interactive group consultations as a feasible, cost-effective form of outpatient diabetes care.¹⁷ Whether appropriate adaptations of the teaching programme could make this model useful for other chronic conditions remains to be ascertained by dedicated randomised controlled clinical trials. ■



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Porta's research interests include the pathogenesis of diabetic retinopathy using *in vitro* models, the prevention of diabetes-related blindness using a population screening approach at clinical level and new organisational models for the management of chronic diseases, with the development of a clinical 'Group Care' approach. He has authored 101 original papers and invited reviews or editorials in indexed journals, 91 articles in other journals and 42 chapters in books, and has edited or co-edited 11 books or monographs. He is co-editor of the series *Frontiers in Diabetes* published by Karger, Basel. Dr Porta obtained his PhD (Medicine) at the Royal Postgraduate Medical School of the University of London in 1983, where he spent six years working on the pathogenesis of diabetic eye disease and the prevention of diabetes-related blindness.

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