

Development and Implementation of Advanced Training Course for Diabetes Educators in Argentina

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Abstract

Purpose. Preliminary report on the development and evaluation of a university-based master's degree program in diabetes education in Latin America.

Methods. The program, based on reported international standards, was developed through the Department of Postgraduate Studies of the National University of La Plata, Argentina, with funds provided by the American Association of Diabetes Educators. This highly interactive program combines pedagogical, psychological, and communication-based education specifically related to diabetes. Consequently, its graduates will be prepared to communicate effectively with their patients about their self-care needs and work with them to overcome the day-to-day barriers that prevent them from inte-

grating self-care effectively into their lives.

Results. The program was successfully implemented, and 20 students have completed their 1st year, including preparation of a formal master's thesis proposal. During the next year, they will establish and evaluate diabetes education programs in their own communities as part of their master's thesis requirement.

Conclusions. We have successfully implemented a master's degree program in diabetes education, based on reported international standards, that provides diabetes knowledge and educational/behavioral principles. Graduates will be able to help ensure patient participation in the control and treatment of their diabetes.

Diabetes presents a worldwide burden,¹ mainly as a consequence of the development of its chronic complications. Many people with diabetes develop these complications, even though they can be effectively prevented by improved glycemic control and treatment of concomitant cardiovascular risk factors.^{2,3}

One reason for such poor outcomes is the lack of active participation of people with diabetes in the treatment of their disease. Such participation is the key success factor in diabetes treatment, which demands motivation, knowledge, and adherence to a difficult and complex lifetime regimen. Although extensive evidence supports this concept,⁴⁻¹¹ in many countries only a minority of patients receive diabetes education.⁵ Thus, limited knowledge of diabetes is frequent among people with diabetes.¹²

The Qualidiab report (a program for the control of quality of care of people with diabetes) has shown that in six countries of the Latin American

region, < 50% of the people with diabetes perform self-monitoring of blood glucose, and > 70% of those who do monitor blood glucose cannot interpret the results. In addition, ~ 40% of people do not know how to prevent or treat episodes of hypoglycemia or how to take care of their feet.¹³ This is not a minor issue in a region that the World Health Organization (WHO) estimates to be among those with the greatest increase in diabetes¹⁴ and that has a limited budget for diabetes care.¹⁵ Furthermore, lower socioeconomic status, characteristic of this population, is associated with higher prevalence of diabetes,¹⁶⁻¹⁸ lower use of preventive services,¹⁹⁻²¹ lower levels of diabetes knowledge,²⁰ less adherence to treatment regimens,²² and higher complication rates.^{13,23,24} A wider implementation of diabetes education programs would permit patients to play a more active role in their diabetes treatment and result in improved outcomes and lower future

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expenditures for complications.

The results of a cooperative study developed in 10 Latin American countries support this assumption. The implementation of a structured group education program for people with type 2 diabetes was both cost-effective and cost-beneficial,²⁵ resembling data reported in developed countries.^{4,5,7-10} Therefore, diabetes education, even in underserved populations, can significantly improve diabetes self-care with a consequent benefit in terms of metabolic outcomes, costs, and quality of life.

Educational programs require large blocks of time, specific training, teaching and communication skills, a supportive attitude, and readiness to listen and negotiate.²⁶ Thus, effective education requires training in both diabetes content and program delivery.²⁷ Furthermore, if diabetes education suddenly became accepted and paid for, Latin America would not have sufficient qualified diabetes educators to cope with the existing demand. It is therefore imperative that we begin now to develop highly skilled diabetes educators in Latin America to meet the needs of the increasing number of people with diabetes within this community.

Because of this situation and the lack of high-level systematically implemented diabetes educator training programs, the Education Consultative Section of the International Diabetes Federation (IDF),²⁸ the Education Committee of the Declaration of the Americas (DOTA),²⁹ and the Diabetes Education Study Group of the European Association for the Study of Diabetes (EASD)³⁰ have developed standards for diabetes education to provide a benchmark for ongoing evaluation and improvement. However, the utility of these standards has not yet been formally tested, thus limiting their widespread implementation.

In an attempt to address this problem, we have developed a master's degree program in diabetes education specifically designed to test the applicability of these published standards. In this publication, we report preliminary, descriptive information about a 2-year program released through the Postgraduate Department of the School of Medicine of the National University of La Plata in Argentina to train

educators from different areas, countries, and regions. We took advantage of the local experience gained in delivering education courses for people with diabetes and for educators at the Center of Experimental and Applied Endocrinology in La Plata and the Bernardo A. Houssay Diabetes Education Center, where we have educated > 1,200 patients and > 600 health care professionals from Argentina and other Latin American countries. Educators from other faculties of our university and international experts provide their experience and support in the fields of diabetes education, psychology, and communication (Table 1).

METHODS

Philosophy of the Master's Program

The primary premise of the program is that caring for people with diabetes goes far beyond the traditional tasks of making a diagnosis and providing medications. It must include training people with diabetes in acquiring the knowledge and skills for day-to-day self-management and stimulating their motivation for a lifetime complex treatment program. This requires that education providers understand different personalities, health beliefs, and degrees of disease acceptance and the influence of the family and social environment.

To accomplish this effectively, health care providers and diabetes educators must acquire skills not traditionally included in their curriculums. Additionally, a shift away from the traditional authoritarian, paternalistic attitude of doctors and other members of the health care

team to an attitude of acceptance, empathy, and encouragement to share the responsibilities of treatment and their day-to-day implementation is imperative.

The master's program currently described was designed to provide evidence on how the International Diabetes Education Standards²⁸⁻³⁰ can be successfully adapted and implemented in an education program. It also offers the opportunity to test interventions and tools that can be broadly used by educators serving hard-to-reach populations with limited resources.

Program Goals and Implementation

Our goals were:

- to test the applicability, flexibility, effectiveness, and implementation difficulties of the published consensus standards in a master's course for diabetes educators;²⁸⁻³⁰
- to develop and implement a model training course for diabetes educators, based on the empowerment of people with diabetes;
- to attain in the course curriculum an adequate balance between knowledge, skills, and attitudes about practice guidelines, diabetes self-management, and basic principles of pedagogy, psychology, sociology, communication science, and bioethics;
- to define the minimum number of trainers and critical disciplines required to ensure effective program implementation;
- to demonstrate the need and effectiveness of an interdisciplinary team approach to diabetes education by course practices, including role playing in simulated educational sessions;

Table 1. Administrative Organization of the Course

<p><i>Course Director</i> J.J. Gagliardino</p> <p><i>Academic Secretary</i> V. Perez</p> <p><i>Interdisciplinary Academic Committee</i> L. Acuña N.V. Cédola A. Dumón I. Feoli</p> <p><i>Committee of International Organizations' Representatives</i> P. Aschner (ALAD), A. Barcelo PAHO (Pan American Health Organization), G. Roglic (WHO), M. McGill (IDF Education Committee), R.E. Hernández (School of Medicine, La Plata University)</p>	<p><i>Vice Director</i> M. del C. Malbrán</p> <p><i>Administrative Secretary</i> M. López</p> <p><i>International Committee</i> J.-P. Assal (Switzerland) D. Figuerola (Spain) P. Kronsbein (Germany) L. Siminerio (United States)</p>
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- to apply existing models and adapt or develop new ones to improve understanding of what influences different people with diabetes to learn and properly treat themselves;
- to assess and compare barriers to implementation of education programs for people with diabetes in different socioeconomic and health organizational settings and find alternatives to solve them;
- to assess and compare providers' perceptions and attitudes about diabetes;
- to train diabetes educators and enable them to cope with the difficulties encountered in educating people with diabetes, including natural resistance to changes in lifestyle; and
- to promote research in the field of education and on evaluation of educational programs for people with diabetes and their impact on clinical and socioeconomic outcomes.

The curriculum has a modular structure, with 23 half-day modules for a total of 180 hours, and follows the format of an entire day every 2 weeks, during which two modules are presented. This format best suited our students who worked full-time and in some cases had to travel long distances to the program's site in La Plata. Between these on-site activities, participants are assigned homework that is then verified at the next on-site presentation. Examples of the course structure are summarized in Table 2.

Each module is designed to attain a specific educational objective and consists mainly of interactive activities and formal short lectures.

The lecturers include experts in the fields of diabetes, psychology, pedagogy, communication science, and disease management. This provides students with perspectives on the practical problems that patients will present

as well as tools to solve them. We use brief lectures that summarize the essential elements of a given topic or problem before the practical group exercises that follow. The attendees also receive didactic material on the theoretical basis of the subject to review after the sessions. The lecturers share the responsibility for organizing the entire session/module, including the workshops. Because the activities are highly interactive, no more than 30 students can be incorporated into the program, allowing two to three groups, and smaller groups for some activities.

Interactive Learning

To promote effective participation of attendees, we used several interactive techniques, such as the metaplan, developed by Eberhard Schnelle for group work facilitation and organizational analysis; role-playing, based on

Table 2. Content, Aims, Methods, Materials, and Activities

CONTENT	AIMS	METHODS	MATERIALS	ACTIVITIES
Introduction: aims and activities J.J. Gagliardino, M. del C. Malbrán	To understand the role of education and active participation of patients in the control of chronic diseases; To understand the aims of the course and its procedures, techniques, and methods	Lecture, small group work	PowerPoint overheads	Small group discussion followed by plenary session. Homework: summarize the different issues included in the plenary discussion.
Searching bibliographic databases A.M. Martínez, R. Stubb	To learn how to make a bibliographic search using and consulting appropriate technology and databases	Lecture, small group work	Individual computers and e-mail connection	Online references search using different databases. Homework: prepare an assigned reference search.
Diagnosis and classification: diabetes and cardiovascular risk factors N.V. Cédola, J.J. Gagliardino	To learn the concepts of prevalence, diagnosis, classification of diabetes and of the other associated cardiovascular risk factors and of a population at risk; To know the guidelines for history taking, physical examination, and ancillary tests for ambulatory care	Lecture, small group work	PowerPoint overheads, clinical records	Role playing and small group discussion using the metaplan and plenary presentation of final conclusions. Homework: prepare a referenced summary document.
Communication: interviewing M. del C. Vidal Benito	To learn the basic principles of personal communication and interviewing; To understand and experience active listening	Lecture, role playing, small group work	PowerPoint, clinical records, guidelines	Small group practice: playing roles as patients and educators. Homework: prepare a referenced document summarizing the seminar's conclusions.
Pathophysiology of diabetes J.J. Gagliardino	To identify the different mechanisms involved in the pathophysiology of type 1 and type 2 diabetes used as a basis for their diagnosis and treatment	Lecture, small group work	PowerPoint overheads, clinical records	Small group discussion on pathophysiological aspects of both types of diabetes. Homework: prepare a summary of the pathophysiology of type 1 or type 2 diabetes for an audience of people with diabetes.

the playing of short scenes with each participant assuming a different role from what they have in real life; and problem-based learning, a pedagogical strategy that poses significant real-world situations and provides resources, guidance, and instructions to participants as they develop knowledge and problem-solving skills.

Evaluation

The evaluations have two purposes: 1) to evaluate students' performance and 2) to teach students how various evaluation techniques can be used in planning their diabetes patient education courses and can be incorporated into these courses.

Evaluation goals

- Goal:* To test the applicability, flexibility, effectiveness, and implementation of the published standards in the development of training courses for diabetes educators. *Method:* Assessment of the implementation of the standards perceived by organizers, trainers, and participants as registered in process evaluation forms.
- Goal:* To achieve a balance between knowledge, skills, and attitudes about practice guidelines, diabetes self-management, and the

principles of pedagogy, psychology, sociology, communication science, and bioethics.

Method: Comparison and measurement of the knowledge, skills, and attitudes of the participants before and after the course.

- Goal:* To create among course participants the need and usefulness—based on course practices that evidence its effectiveness—of the interdisciplinary team approach for the control and treatment of people with diabetes. *Method:* Answers and attitudes of the participants toward teamwork as the course develops.
- Goal:* To assess and compare providers' perceived barriers to implementation of education programs for people with diabetes in different socioeconomic and health organization settings and find alternatives to solve them. *Method:* Participants' opinions collected during the course using the metaplan procedure.
- Goal:* To encourage attendees to find ways to overcome difficulties for the development and implementation of diabetes education courses, based on the empowerment of people with diabetes, by improving their knowledge, skills, and attitudes.

Method: Evaluation of the percentage of participants who successfully implement diabetes education courses in their work places. Ultimate success will be defined according to the changes induced in the patients on clinical, metabolic, therapeutic, and economic parameters.

Evaluation instruments

Evaluation of knowledge. Multiple-choice questionnaires are used.

Lecturers prepare six multiple choice questions with similar characteristics and difficulty about their topic. The questions are then reviewed by an expert committee to ensure homogeneity of both degree of difficulty and correct inclusion of appropriate distracters.

Evaluation of skills. Performance of a given test or practice is evaluated.

Evaluation of attitudes. Practical tests and observational rating scales are used. Evaluation is performed before, during, and at the end of the course.

Postprogram Follow-Up and Evaluation

Implementation of an education course for people with diabetes. After completion of their formal coursework, students must establish and evaluate a diabetes education program

Table 3. Sample Student Evaluation Table, 2004 Cycle

n	Surname	First Name	Activities																	Final Grade		
			Practical Exercises											Partial Evaluations			Oral Presentations				Thesis Plan	Final Eval.
			2	3	4	5	6	7	10	11	12	13	Mean	8	16	Mean	12	14	15		17	18
1.	A.	V.	6	5	6	5	5	6	5	6	5	5	5.40	7	7	7			6	5	6	5.88 = 6
2.	A.	D.	7	8	8	7	8	9	9	9	10	9	8.40	8	7	7.50	9			9	9	8.60 = 9
3.	E.	A.E.	10	10	10	10	10	10	10	9	10	10	9.90	8	8	8		9		10	9	9.18 = 9
4.	E.	S.	4	4	4	5	4	4	4	4	5	4	4.20	7	7	7			7	6	6	6.04 = 6
5.	G.	G.	10	10	10	10	9	10	10	9	9	9	9.60	7	7	7		10		9	9	8.92 = 9
6.	G.	K.B.	8	7	8	7	6	6	8	8	8	8	7.40	8	8	8		9		10	9	8.68 = 9
7.	L.	L.	6	7	7	6	6	6	7	7	7	8	6.70	6	6	6	7			5	6	6.14 = 6

The table allows one to visualize the qualifications obtained by sample students in each one of the activities developed in the 2004 cycle of the master's program. Its objective is to facilitate understanding of the method established in order to arrive at the final qualification of each student.

Procedures for assigning the evaluations for each activity

Activities 2–13: Grades correspond to the practical exercises (metaplans and notebooks). This evaluation is the mean of independent evaluations made by the tutors, the director, and the vice director.

Activities 8 and 16: Partial evaluation is the value obtained based on the number of correct responses on a multiple choice examination.

Activities 12, 14, and 15: Grade for oral presentations is the mean value of grades given by the tutors, the director, and the vice director.

Activity 17: Grade for the thesis project is the consensus evaluation jointly reached by the director and vice director.

Activity 18: Final examination grade is the joint evaluation of the oral presentation by the director and the vice director.

Final grade: Mean of the grades received in all of the evaluations that occurred during the 1st year of the master's program.

based on a master's thesis proposal submitted at the end of their 1st year. The students have an advisor to help them develop the proposal. The program must be implemented and evaluated during the 2nd year as the final degree requirement.

Evaluation of the course by participants. A questionnaire prepared by the organizers to record participants' opinions to improve the future development of the course.

Additional activities. The master's program has two additional courses not herein described that are required by the university: English proficiency and an introduction to research methods. Both are of considerable value in the development of students' master's thesis organization and evaluation as well as in the reading of English bibliographic materials.

RESULTS

In 2004, we enrolled 22 students in the program, including primary care physicians, nutritionists, physical education professors, and a psychologist. Table 3 shows representative student evaluations ranging from 1 (lowest) to 10 (highest). Of the 22 students

enrolled, 2 abandoned the course for personal problems; the remaining 20 received passing grades averaging 7.5, and 5 received honors.

Table 4 summarizes the students' thesis projects, which required 1) a curriculum plan; 2) preparation of education material; 3) selection of questionnaires of knowledge, attitudes, and outcomes, as well as patients' perception and satisfaction; and 4) specification of the statistical tests to be used to evaluate the impact of their educational interventions.

DISCUSSION

As early as 1875, Bouchardat³¹ was promoting patient education, daily urine tests, and weight reduction as cornerstones of therapy in type 2 diabetes. In 1925, Joslin said "There should exist an education program that explains to the community the importance of diet and physical activity to prevent the development of obesity and of diabetes. It should also demonstrate the importance of these interventions for the control and treatment of diabetes. However, this type of program should start with the doctors."³² Education is now widely accepted as

an integral part of diabetes therapy,³³ but its implementation is not the norm among people with diabetes.¹²

This may be in part because of its low priority in the health care system;^{34,35} health financing organizations are more likely to support recovery and rehabilitation than prevention strategies.³⁶ Additionally, effective education requires training in its delivery,⁸ and programs to educate educators are few in number and essentially absent in most developing countries. As mentioned previously, several organizations have published guidance for programs to educate diabetes educators, but these have not been widely tested in developing countries. Consequently, our first objective was to see whether we could effectively incorporate educational guidelines from IDF, DOTA, the Asociación Latino Americana de Diabetes (ALAD), and EASD into a master's degree program in diabetes education.

Our data demonstrate that these guidelines can be successfully incorporated into an educational program. Furthermore, there is a demand for such a program: we were able to enroll 22 busy health professionals, 20 of whom have successfully completed their coursework. That we were able to provide scholarships to all of the students (provided by the pharmaceutical companies listed in the acknowledgments section of this article) is also a measure of the support for the development of diabetes educators within the health care community.

It may surprise our American readers that such a large percentage of the attendees were physicians and also physical activity trainers/therapists, whereas in the United States, the vast majority of diabetes educators are nurses or dietitians. We speculate that the reason is multifactorial:

1. A large number of physicians in Argentina are in a very competitive environment, and our education program is likely to give them a competitive edge.
2. Physical activity trainers/therapists are already involved in health care through rehabilitation programs for people with cardiac disease, many of whom have diabetes.
3. The use of nonphysician health professionals in diabetes education is relatively new in Argentina. Our Programa de Capacitación para Integranes no Médicos del Equipo

Table 4. Master's Students and Theses

V.A.	Impact of a structured, group education program on people with type 2 diabetes treated with insulin.
A.E.	Effect of an educational intervention on people with diabetes and end-stage renal disease on dialysis treatment.
S. E.	Education of people with first-degree relatives with diabetes.
G.G.	Effect of intake of foods with a low glycemic index on postprandial blood glucose in people with type 2 diabetes.
K.G.	Implementation and effects of a therapeutic education program for people with type 2 diabetes.
L.L.	A physical activity program for people with type 2 diabetes: better metabolic control and adherence to treatment.
J.L.M.	Impact of diabetes education on standard treatment of people with diabetes.
N.M.	Evaluation of the impact of recreational-educational activities in a group of children with diabetes and their families.
E.N.	Evaluation of the impact of an educational intervention of people with type 2 diabetes on clinical and biochemical indicators of metabolic control.
D.P.	Nutritional education of school children: a useful tool to create healthy habits and prevent metabolic diseases.
S.R.	Importance of decreasing cardiovascular risk factors in secondary prevention.
R.S.	Impact of diabetes education on degree of metabolic control and other cardiovascular risk factors in a population of people with type 2 diabetes.
V.M.V.	Behavioral, clinical, and metabolic changes induced by an education program in people with type 2 diabetes.
Z.Z.	Nutritional education in a population at risk in an institution of the social security system.

de Salud en Diabetes Tipo 2 (CADIEQ, for its initials in Spanish)—conducted in collaboration with the Argentine Diabetes Society from 1999 to 2002—was the first attempt to train such professionals in diabetes education.³⁷

4. The profession of nursing in Argentina is only now emerging as a recognized area of university study, and the great majority of nurses in our country have not graduated from a standardized university curriculum. Thus, they cannot be incorporated in a post-graduate university course such as our master's program.

As summarized in Table 2, we were able to combine the diabetes content with the psychosocial, behavioral, and pedagogic content necessary to create a cadre of well-grounded professional diabetes educators. Although it is clearly too early to evaluate the students' success in implementing their programs, they are required to complete their projects with at least 6 months of follow-up evaluation to earn their degree. Thus, their results will provide a final objective measure of the degree of success we have achieved in our master's course implementation.

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