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EC DIABETES AND METABOLIC RESEARCH

Research Article

The Gaps between Diabetes, the Patient and the Care Team. Strategy to Reduce Them

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Received: February 07, 2020; **Pubished:** February 18, 2020

Abstract

Background: Diabetes is a disease of high prevalence and incidence that leads to chronic micro and macrovascular complications. Most of the patients are treated in external consultation, in successive controls according to the health plan that is available. However, many of them come with hba1c above goals. As an incurable, asymptomatic and poorly controlled dis- ease, the patient evolves in an indolent way for many years until it is clinically manifested by some chronic complications. On the other hand since their diagnosis, the patients are evaluated in a clinical course and are formulated by several specialists without there being uniformity in their follow up. These gaps cause con- fusion, adverse effects, poor control, loss of adherence to nutritional regimen and increased morbidity and mortality.

Objective: To develop and validate a simple and practical instrument to incorporate the patient and his family in the evolution of his diabetes. In addition to having a referent, achieve a clinical follow-up, integration of the different specialists who attend the disease, improve knowledge, nutritional compliance and self-monitoring by the patient.

Methods: We selected 120 randomly selected patients. A 60 was given a pre-written notebook and 60 (control group) were given standard consultation. The book was made up of 5 sheets, each of which had data related to their illness: first page contact phone number with medical doctor, second sheet, age, time of diabetes, results and date of last hba1c and medications currently taken with their doses. Third sheet human figure highlighting the organs involved with chronic complications (eyes, heart, kidneys and feet) with dates of last evaluation. Fourth sheet, nutritional information with feeding schedules, type and quantity of food suggested by the nutritionist. Fifth sheet, daily glucose fasting and two hours after the main meals ordered stepwise. At the beginning of the study and one year after all, an analysis of the clinical variables was performed and they were submitted to a satisfaction survey with 5 questions namely: 1 - it seems important to have a referent for the control of their disease?. 2. Do you know what medications you take and what are they indicated for? 3- Do you know how your metabolic control is? 4- Do you know what complications are caused by bad control and on what dates were they evaluated? 5- Do you eat according to nutritionist recommendation?

Results: The mean age was 64,3 years. 54% of the patients were women. The hbA1c average, at baseline was 7.25% in both groups. At the end of the study it was 6.7 in those who had a note- book (a decrease of 0.6%) and 7.3% in those who did not have it. Related to the satisfaction survey, the positivity of the responses in the notebook group increased by 53% at the end of the study.

Conclusion: Finding empowerment tools, such as the personal notebook, allows to the patients access to his/her r treating physician immediately, keep medication in mind with your doses, know your metabolic control and chronic complications, adjust to a circadian eating rhythm, and get a referral with an orderly self-monitoring.

Keywords: *Control and Monitoring; Empowerment; Nutritional Compliance; Diabetes*

Introduction

Diabetes mellitus is a worldwide public health problem. The seventh atlas of the IDF (International Diabetes Federation) reports that there are 415 million diabetics in the world, with the possibility of an upward trend and therefore that people with chronic complications increase. According to data from the World Health Organization (WHO) in 2014, the global prevalence was 9% among adults over 18

years. Currently, the prevalence in Colombia is around 7% and according to projections, diabetes will be the seventh cause of mortality in 2030, especially in low and middle income countries. Diabetes llitus is a degenerative disease in which patients live asymptomatic until, over time, hyperglycemia leads to vascular, neurological, renal, ophthalmological and cardiac complications. Studies such as DCCT, EDIC, in type 1 diabetics and UKPDS, STENO 2 in type 2 diabetes, showed that the closer to normal and for longer periods the blood glucose level is, the lower the possibility of presenting the described complications. Therefore, diagnostic time and metabolic control are determining factors for the well-being of patients.

The patient with a diagnosis of diabetes has three characteristics, must be monitored forever, is exposed to chronic complications and is a patient with an individual evaluation profile depending on their biological response. Live for a long time poorly controlled. Therefore, its inflammatory endothelial effect determines late complications. The response to the disease is also very variable in each case. The diabetic is often diagnosed early and depending on the degree of personal understanding, family support and the way it is approached by the doctor, he will have a behavior and responsibility with his illness that will influence in a decisive way in his future. You must change your lifestyle, take life-long medications, normoglycemic agents, antihypertensives, lipid-lowering agents, blood thinners, analgesics, immunosuppressants, antibiotics, anti-ulcers, hormones, antiresortives, apply insulins, etc. Nutritional compliance is irregular as is self-monitoring. It is evaluated in the first instance by general medicine, internal medicine, endocrinology, diabetology and nutrition. In suspicion of chronic complications every year due to ophthalmology, cardiology, nephrology and diabetic foot (podiatry, orthopedics, vascular surgery) and according to their comorbidities due to pulmonology, rheumatology, hematology, infectology, general surgery, oncology, gastroenterology, gynecology and urology. Each one issues a concept and evaluates the patient from his angle, without there being uniformity of concepts or concrete prosecution of the patient. This phenomenon, called fractured medicine, breaks the diabetic patient's ideal care scheme and is in many ways more counterproductive than beneficial, in addition to going against minimally disturbing or disruptive medicine.

Methods

Design

From February 2014 to February 2015, 120 patients were randomly chosen in a type 2 diabetes care center (Darsalud IPS). They were divided into two groups. Group 1 consisting of 60 people was given a notebook. It is explained to them that this notebook has important information for the control and follow-up of their disease, which should be brought to all controls and should be shown to all the medical team of promotion and prevention, cardiovascular control and nutritionists. In addition, because it is the patient's notebook, it must be reviewed by family members, write down the doubts and update it. This instrument allows the patient and his family to have a sense of ownership and integrate them into the management plan.

It consists of 5 sheets

Sheet number 1 has the name of the patient and the telephone of direct contact with the health team. Being able to have a direct access with the treating or referring team, allows to solve any inconvenience, symptom or uncertainty. The cell phone is a direct and immediate contact, can be used as a text and voice message and also serves to send photographs of laboratories, glucometers, foot injuries or feeding styles for adjustment.

Sheet number 2 has the patient's age and duration of diabetes. Important elements for the future forecast. In addition, the list of medications for their different pathologies in order of importance: hypoglycemic, antihypertensive, lipid-lowering, thyroid regulators, osteoporosis medications, gastritis, immunosuppressants, corticosteroids, vitamins and others, with their respective doses and schedules of taking. This list must be updated by the patient or his relatives, so that all the specialists who see it will be aware of the patient's pharmacological management to date. In this same sheet the value of the last HbA1c and date of the result are written. This allows the evaluation to start from the current metabolic condition.

Sheet 3 is made up of a drawing of the human figure highlighting 4 organs in which the chronic complications of diabetes occur: eyes, heart, kidneys and feet, with dates of the last assessments: ophthalmological, cardiac - ca, creatinine or glomerular filtration and feet in terms of vascular, neurological, orthopedic and infectious. In case of presenting more pathologies they will also be noted: cancer, cardiac or abdominal surgery, coronary bypass or any relevant disease. During the follow-up, knowing the dates allows evaluations in search of an opportune and early diagnosis of any secondary complications.

Sheet 4, has the schedule and amounts of food that the patient should consume according to their preference and should be done on a daily basis, trying to follow the recommendations of the nutrition team. It was carried out in conjunction with the nutrition group and allows a simple way to follow a calculated daily calorie regimen following a daily circus rate. Breakfast, 7 am, consists of a dairy, 15 grams of carbohydrate and an example protein: coffee with milk without sugar, a toast, an egg and a portion of cheese. Mid-morning, 10 am, a portion of fruit tailored, chopped and chewed, according to the preference of the coffee cup size flush. There is no distinction of the type of fruit, the important thing is that it is the same portion every day and at the same time. Lunch, 1 pm, should not have ordinary soup, if desired there can be broth with vegetables and meat or vegetable cream. The main course should have half a plate of raw and/or cooked vegetables, a portion of meat, chicken or fish, the size of the palm of the hand and a portion of flours (rice, potatoes, cassava, plantain or spaghetti) minimum of size of two fingers together. Equal portion if a grain such as beans, lentils, chickpeas or peas is desired. Liquid table top with juice of 8 fruits that are not eaten in the usual way, tree tomato, passion fruit, lemon, blackberry, guava, soursop, curuba or lulo. It can also be water or sugar free soda. Mid-afternoon, 4 pm, it can be red or aromatic water with two soda crackers. For dinner, at 7 pm, it is usually customary in our population to eat little. It can vary according to the patient's preference: a portion of vegetables and meat with juice, or a cup of coffee with unsweetened milk with two toasts. The important thing is to comply with the calorie input cycle and schedule. This allows the medicines used and insulins to act in a more regulated manner.

Sheet 5 is the daily self-monitoring which must be carried out. according to a specific table that indicates a measurement on an empty stomach and after the main meals. It is convenient to avoid the pain that the trigger uses, in the lateral region of the little finger of the non-dominant hand. We recommend fasting and two hours after each meal, the moment of more metabolic impact of food. 7 am, 9 am, 3 pm, 9 pm. It must be staggered daily and recorded in the record of the notebook to be evaluated in the following control.

As a control group, 60 patients were taken without a notebook who had a standard consultation. On the first visit, the 120 patients were subjected to a survey that was repeated a year later with the following questions:

- Do you find it important to have a contact for your diabetes concerns?
- Do you know what medications you take and what they are for?
- Do you know how your metabolic control is?
- Do you know if you have any complications of diabetes?
- Do you make the diet according to nutritional guidelines?

Other variables such as weight, HbA1c, lipids and blood pressure were evaluated.

Objective

Primary

- Conduct an evaluation of the effectiveness of delivering a notebook, as an element of consultation, education, control and monitoring of diabetes, to achieve a patient's adherence to the disease and its care team.
- Evaluate changes in metabolic control one year later, given by HbA1c value in both groups of patients.

Secondary

- Ensure compliance with a nutritional regime and basic self-monitoring.
- Improve understanding of the disease and family support.
- Integrate treating physicians into the process.

Patients

120 outpatients were randomly taken, all diabetic, regardless of the degree of metabolic control, the presence of chronic complications or other associated diseases.

Process

Darsalud IPS is an outpatient primary care center with a cardiovascular prevention program called Health Day, consisting of general practitioners, specialists (internal medicine, diabetology), psychology, nutrition, nurses, educators and doctors assigned for remission: cardiology, nephrology, ophthalmology, vascular surgery, orthopedics. The population of diabetics corresponds to about 500 patients,

95% type 2 diabetics, all without disabilities and associated diseases such as hypertension and hyperlipidemia. 120 patients were randomly chosen and after reading and signing the informed consent they were divided into two groups. Group 1 was given a follow-up notebook and group 2 had standardized management. Weight, blood pressure, HbA1c were measured and a 5-question survey was conducted at the beginning and one year later.

Statistic analysis

The basic characteristics of the sample were described using measures of central tendency and dispersion.

Ethical aspects

All patients were informed about the characteristics of the study and signed the informed consent. The statistical analysis was performed anonymously and all procedures were based on the Helsinki declaration.

Results

The average age was 64.3 years, 54% of the patients were women. 44.1% had a good metabolic control corresponding to 53 patients, while 24.1% (29) had HbA1c between 7.5 and 9%. 11 patients (9.1%) had HbA1c above 11%. 35% (42) of the patients were obese and 53.3% (64) overweight. 98.3% (64) of the patients were controlled hypertensive, while 81.6% (98) had some degree of hyperlipidemia (Table 1).

Men	46 (44,1)		
Age	64 (11,5)	63 (10)	64,3(100)
Duration of diabetes			
Under 10 years old	14 (11,6)	17 (14,1)	31 (25,8)
10-20 years	28 (23.3)	32 (26,6)	60 (50)
More than 20 years	14 (11,66)	19(15,8)	33 (27,5)
Ultimate HbA1C			
Less than	24 (20)	28 (23,3)	53 (44,1)
7-9%	16 (13,3)	13 (10,8)	29 (24,1)
9-11%	17 (14,1)	14 (11,6)	31 (25,8)
Greater than	6 (5)	5 (4,1)	11 (9,1)
BMI Weight			
Under	7 (5,8)	7 (5,8)	14 (11,6)
25-30	36 (30)	28 (23,3)	64 (53,3)
Greater than	18 (15)	24 (20)	42 (35)
Hypertension	45 (37,5)	65 (54,1)	118 (98,3)
Hyperlipidemia	54 (45)	44 (36,6)	98 (81,6)

Table 1: *Demographic and clinical characteristics of the population.*

The average HbA1c at baseline was 7.3% and 7.2% for group 1 and 2, respectively. At the end of the study, the group with notebook decreased HbA1c on average by 0.6%, while the group without notebook increased 0.9%. This demonstrates a better adherence and empowerment of group 1 (Table 2).

With respect to the satisfaction survey, the positivity of the responses in the notebook group increased by 53% in the difference in averages at the end of the study. Question 1 corresponding to the fact of having a contact in case of consultation or urgency was answered at the end of the study in 100%. With respect to knowing the administered medications and their indications, being aware of knowing their metabolic control, knowing if they have chronic complications and dieting according to nutritional indications, they presented an important weighted increase in the responses one year after their use with a difference of averages of 53%. With respect to the survey conducted in the follow-up of patients without a notebook, the answers at the end did not show significant changes in the difference in averages (Table 3).

	With notebook		Without notebook	
	Start To the year		Start To the year	
Minimum	5,9%	5,5%	5,5%	5,8%
Average	7,3%	6,7%	7,2%	7,3%
Maximum	11,0%	8,4%	10,0%	9,5%
Decrease	HbA1c	0.60%	Increase	0,9%

Table 2: *Metabolic control by HbA1c.*

Answers	Yes	We are so important	No	Yes	Not so important	No
Questions at the beginning						
1. Do you think contact with the health team is important?	55 (92%)	5 (8%)	0 (0%)	9 (15%)	29 (48%)	22 (37%)
2. Do you know how your metabolic control is?	2 (3%)	30 (50%)	28 (47%)	3 (5%)	26 (43%)	31 (52%)
3. Do you know what medications you take and what they are for?	5 (8%)	29 (48%)	26 (43%)	1 (2%)	31 (52%)	28 (47%)
4. Do you know if you have any chronic complications?	7 (12%)	30 (50%)	23 (38%)	1 (2%)	31 (52%)	28 (47%)
5. Do you diet according to the recommendations?	1 (2%)	39 (65%)	20 (33%)	2 (3%)	41 (68%)	17 (28%)
% answers	23	44,2	33,2	5,4	52,6	44,2
Questions a year later						
1. Do you think contact with the health team is important?	60 (100%)	0 (0%)	0 (0%)	7 (12%)	28 (47%)	13 (22%)
2. Do you know how your metabolic control is?	48 (80%)	12 (20%)	0 (0%)	4 (7%)	28 (47%)	27 (45%)
3. Do you know what medications you take and what they are for?	51 (85%)	9 (15%)	0 (0%)	2 (3%)	37 (62%)	21 (35%)
4. Do you know if you have any chronic complications?	25 (42%)	33 (55%)	2 (3%)	1 (2%)	33 (55%)	26 (43%)
5. Do you diet according to the recommendations?	45 (75%)	15 (25%)	0 (0%)	1 (2%)	49 (82%)	10 (17%)

Table 3: *Patient response to the questionnaire.*

Discussion

Having a reference in diabetes, ensuring pharmacological and nutritional compliance, reaching the best possible goal, diagnosing chronic complications early and avoiding fractured medicine among the treating teams is possible thanks to a simple and easy to understand tool.

Where patients and their families bridge the gaps and play a basic role in follow-up.

Comparison of the results against the current literature For many years many strategies of understanding adherence and empowerment have been tried in diabetes. Individual, group education, psychological therapies, brochures, cards, patient club, field activities etc. However, the results are temporary and life habits are altered in a short time and poor control becomes persistent. It is difficult to adhere to the patient and his family and perhaps only those who are interested, generally few, attend the scheduled education. This education is given without academic parameters, or supervision, or scientific evaluation. In clinical studies of primary prevention such as DPS, DPP, Da Quing, STENO, perhaps because they have special parameters, they show some results, but they are generally patients, which can hardly be compared with the general population, by multiple racial, cultural and intellectual factors [1-14].

Explanation of the results

Having a written tool, directed individually, where the most important patient data regarding their health are, with the reference team for any consultation, a clinical follow-up integrating the family and the treating doctors Within the process, it generated great motivation and a sense of responsibility to assume the treatment of the disease.

Strengths and weaknesses

Generating a sense of ownership, empowerment, but especially the understanding of a future dependent on metabolic control and the approach between the different specialties around the patient, were the most important elements of this clinical study. There were no cases of desertion or abandonment.

The only difficulty is the time needed to complete the instrument data on the first visit. One proposal is that the notebook is already printed and you simply have to supplement the data given by the patient.

Implications in clinical practice and research

HbA1c values improved as well as motivation on the part of the patient and his family, which positively influenced the final results. This tool could be used in large populations or promotion and prevention programs.

Conclusion

Diabetes is a heterogeneous, chronic, degenerative disease that involves lifelong control, produces chronic complications and has an individual response to medical and pharmacological treatment. There are gaps related to knowledge, education, the degree of adherence, the effect of poor control, the lack of integration between different specialists (fractured medicine) and the strategies we have to achieve an objective. This study allowed to overcome some of these negative factors and achieved an organic and psychological improvement in this group of patients.

Conflict of Interest

This study was not sponsored by the pharmaceutical industry, it was carried out under legal technical standards without interest other than knowledge.

Acknowledgement

This study was carried out at the Darsalud IPS medical center, with the collaboration of the nursing group of said entity.

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Volume 2 Issue 3 March 2020