Patient Treatment Techniques and Self-care Advance Management for People with Diabetes

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Abstract:

Patients with type 2 diabetes often struggle to develop healthy routines for themselves and meet their treatment goals. This study aimed to compare the positive effects of two diabetes self-care strategies on psychosocial outcomes and glycemic control at the one-year follow-up point. Seventy patients with type 2 diabetes were randomly assigned to one of three groups: a control group (C.G.) that received no intervention, a group receiving a training course after six months (GCR), and a third group (T.S.L.) that was responsible for receiving monthly phone calls to promote self-care behaviours and try to detect and solve problems (C.G., GCR, T.S.L.). Multiple surveys and lab tests were administered at the beginning and end of the study.

After a year of follow-up, members of all three groups showed substantial gains in their understanding of diabetes. Dietary compliance was increased in both experimental groups (p=0.06 and 0.003). The use of G.R.T. also resulted in better adherence to medication (p0.0001). Diabetes-related emotional dysfunction, the prevalence of depression, and glycemic control remained stable. Diabetes self-care is enhanced by reinforcement strategies, as stated in conclusion. More in-depth, long-term research is required to show how these advantages affect patients' ability to heal and live their best lives.

Keyword: Instructional Methods, Noninsulin-Dependent Diabetes Mellitus

INTRODUCTION:

The prevalence of type 2 diabetes and its consequences is rising rapidly in Mexico. In an ideal world, a patient receiving diabetes treatment would experience no symptoms related

to the disease and be protected against immediate and long-term problems. The current prognosis is problematic because the condition is on the rise, it is happening at younger ages, it is being diagnosed later in life, and therapy is frequently insufficient. Despite widespread awareness of the benefits of tight glycemic control, patients often struggle to keep up with the necessary self-care practices and therapeutic targets during regular clinical work. That's why it's so important to have proven methods for encouraging patients to stick to their prescribed treatment (Guerrero, 2018).

To this end, diabetes education is helpful; however, multiple studies have demonstrated that the benefits gained from diabetes education are not maintained if provided without ongoing reinforcement of the information. Six-monthly educational reinforcement courses and monthly phone follow-ups are viable options at our university (particularly in patients with more significant difficulties in achieving therapeutic goals). Based on these hypotheses, the present research was done to assess the effectiveness of two interventions: monthly phone calls and a six-month instructional course to improve glycemic control, medication adherence, the presence of depression, and functional impairment. After a year of monitoring, diabetes was still present (Braúna et al., 2020).

MATERIAL AND METHODS:
SUBJECT AREAS:

Patients with type 2 diabetes between the ages of thirty and seventy-five who were regulars at the Internal Medicine Consultation and the Diabetes Clinic at the National Institute of Medical Sciences and Nutrition participated in a prospective study. Seventy patients were enrolled, all of whom participated in a comprehensive two-day introductory diabetes education course that covered the fundamentals of diabetes treatment. Patients with type 1 or secondary diabetes, those who had been hospitalized in the previous three months, and those who suffered from chronic or disabling conditions that made it difficult for them to keep their scheduled appointments or affected their mental capacity were not eligible. The patients came from disadvantaged backgrounds, with just 55.1% had completed elementary school (Moscoso et al., 2020).

METHODS:

After receiving education, 70 people with diabetes were divided into three groups. Patients in the control group (C.G.) kept up with their regular treatment regimen of seeing their doctor once every three to four months for a comprehensive clinical evaluation and treatment adjustment based on the results of laboratory studies and blood glucose monitoring; optionally, patients in the C.G. met with a nutritionist. The other groups likewise underwent experimental conditions, although they were treated similarly. The second cohort participated in a diabetic reinforcement education programme for an entire year (GCR).

This programme is designed for groups of 6-8 people with diabetes and lasts five hours. Topics covered include essential diabetes management, complications, and how to avoid them. A physician, a diabetes nurse educator, a nutritionist, and a psychologist facilitate sessions. They are designed to help patients improve their self-care and cope with daily challenges. Finally, they're prompted to share their stories and experiment with a new therapy and problem-solving approaches to progress toward their goals and enhance their quality of life. One of the participating physicians (G.R.T.) called patients in the third group once a month, asking a series

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of questions designed to encourage self-care behaviours, and identify and, hopefully, resolve problems related to diabetes control (Pérez-Cruz et al., 2020).

At baseline and one-year follow-up visits, participants filled out a brief clinical history form and a battery of questionnaires and underwent a battery of blood tests. Self-care behaviours, treatment adherence, diabetes knowledge, depression, diabetes-associated emotional dysfunction, and glycemic control were to be evaluated (HbA1c). Each participant provided their informed consent after an ethics committee approved the study.

Questionnaires

The patients filled out several questions previously tested on the Mexican and Hispanic communities in the United States.

Completion of Therapy: We incorporated four questions about managing your diabetes from the Self Care Inventory. With the four options are separated by a scale ranging from one (never) to Five (always) (blood glucose monitoring, medication compliance, healthy diet, and physical activity). An overall grade of at least four indicates proficiency in every category. Two questions on the patient's mood in the preceding weeks were used to determine the presence of depression; these results correlated strongly with those of more in-depth tests. 9 Have you been experiencing "low batteries" frequently over the past few weeks? , sad and discouraged, lacking hope? Have you felt a lack of enthusiasm or enjoyment for life's activities in the previous few weeks?

The PAID questionnaire was used to assess emotional dysfunction in people with diabetes. This instrument's validity and therapeutic utility for measuring emotional dysfunction in individuals with type 1 and type 2 diabetes have been established. An emotional dysfunction connected with diabetes is proportional to the severity of the disease. Therefore, scores above 50 indicate severe problems. Require the expertise of a professional to deal with (Rueda et al., 2019).

Table 1: Initial characteristics of the three groups are summarised.			
	G.C. (n=17)	**GCR (n=24)**	**G.R.T. (n=18)**	**p**
Age (years)	55.0±10	58.0±11	59.0± 9	0.58*
Female sex	59%	63%	83%	0.23**
B.M.I. (kg/m²)	28.7± 6.2	27.8± 4.7	26.9± 4.5	0.70*
Duration of diabetes (years)	14.0± 4	12.0± 7	11.0± 8	0.36*
*Body mass index (B.M.I.), C.G. (control group), GCR (educational reinforcement group), and G.R.T. (a group with monthly telephone calls) all refer to the same experiment. *Kruskall-Wallis ** c2 from Pearson.*			

The American Society of Clinical Endocrinologists' (ASCE) questionnaire was used as a foundation to gauge participants' familiarity with diabetes-related topics. This resource has

numerous parts, each testing a different facet of diabetes knowledge. Several answers were tested and refined in the Spanish version of the questionnaire.

MATERIALS AND METHODS

At the beginning of the study and after a year of follow-up, patients participated in the same battery of tests. A Wilcoxon signed-rank test was applied to pairwise comparisons to evaluate the differences between the groups. A Mann-U Whitney's test, Kruskall-Wallis test, and Pearson's 2 test were used to compare continuous variables between groups, while a Pearson's 2 test was used to compare categorical variables. Logistic regression analysis was used to calculate the odds ratio as a measure of association, allowing for an estimate of the likelihood of obtaining adequate glycemic control or decreasing the emotional dysfunction associated with diabetes (Sosa-García et al., 2020).

Treatment adherence and glycemic control were measured annually. The effects of age, body mass index, and duration of diabetes were analyzed using a multivariate analysis of variance with a generalized linear model and a multiple logistic regression model. All studies were done with SPSS 12.0.

RESULTS:

Fifty-nine patients finished the research, and 11 were lost to follow-up (five from the C.G., two from the GCR and four from the T.R.G.). Regarding demographics, these patients were not statistically distinguishable from the study's other participants. Patients with complete data were predominantly female (67.8%), middle-aged (mean age 58.10 years), and overweight (mean BMI 27.85 kg/m2). The average HbA1c was 8.6%, and people had diabetes for an average of 12.8 years. Almost one-fourth of people used insulin (23.7%). There were no significant differences between the three groups at the outset of the trial on any clinical or psychosocial characteristics included in Table I.

Those with diabetes for a more extended period (>10 years) had a higher prevalence of diabetes-related comorbidities and a higher HbA1c level. Table II compares the study's initial and final results across all variables. All three groups showed substantial growth in their understanding of diabetes after a year of follow-up. In addition, there was an increase in the experimental groups' ability to stick to their diets (p=0.06 and 0.003, respectively). Medication adherence was also considerably enhanced by G.R.T. (p0.0001).

The Diabetes Knowledge Questionnaire was not correlated with treatment and diet plan adherence. None of the groups showed statistically significant improvements in HbA1c, depressive symptoms, or emotional dysfunction attributed to diabetes. The group that received monthly reinforcement phone calls had a trend toward lower HbA1c readings at the end of the follow-up year (8.1% versus 8.8% in the GCR and 9.4% in the C.G.), albeit this difference did not achieve statistical significance (Bouza & Fonseca, 2018).

Table 2: Clinical and psychological factors at baseline and after a year for the three groups are listed

	G.C. (n=17)			GCR (n=24)			G.R.T. (n=18)		
	Before	**After**	*p**	**Before**	**After**	*p**	**Before**	**After**	*p**

HbA1c (%)	9.3±	1.99.4± 2.5	0.89	8.3±1.7	8.8±1.8	0.49	8.5±1.4	8.1±2.1	0.111
knowledge in diabetes (mean±SD)	36.0±7.0	40.0±5.0	0.002	37.0±8.0	41.0±7.0	0.003	36.0±10.0	42±4	0.022
Take the right amount of tablets or insulin (%)	94.0	88.2	1.00	79.2	91.7	0.38	72.2	100.0	0.0001
Consume the eating plan recommended (%)	35.3	58.8	0.38	33.3	70.8	0.06	16.7	16.7	0.003
Exercise regularly (%)	64.7	41.2	0.42	54.2	66.7	0.64	50.0	77.8	0.26
Depression (%)	31.3	52.9	0.28	56.5	45.8	0.80	33.3	44.4	1.0
PAID score (mean ± S.D.)	51±19	49±23	0.58	49±29	38±21	0.19	45±23	46±26	0.85

*CG=Control group, GCR=Group that received a reinforcement educational course, GRT=Group with monthly telephone calls. *Wilcoxon test.*

Age, body mass index and length of diabetes were evaluated using multivariate and multiple logistic regression analysis. Only in C.G. versus G.R.T. was a nearly significant connection (beta exponential 0.22, p=0.06) shown between treatment adherence and glycemic control, and this association was primarily driven by body mass index. Those who were called once a month were more active and had a lower body mass index than those who weren't. Patients younger than 55 had higher odds of experiencing severe emotional dysfunction due to diabetes (OR=5.1, 95%CI=1.6-16.1, p=0.006). There was no correlation between emotional dysfunction and glycemic control, gender, duration of diabetes, or reinforcement approach (King-Martínez et al., 2020; Ortiz et al., 2020).

DISCUSSION:

Patients with type 2 diabetes who were given reinforcement strategies showed improvement in several self-care activities. Age, treatment complexity, duration of illness, depression, and, particularly in our society, economic constraints that make it challenging to purchase prescriptions and the intake of suitable foods can all have direct or indirect effects on diabetic self-care. 4 Educational programmes with oral, written, or visual materials, various psychosocial support techniques, and behavioural treatments with positive reinforcement when therapeutic goals were accomplished were all assessed to enhance diabetic self-management (Reza Gholami et al., 2020).

Most respondents have reported some success sticking to their treatment plans, and some have even reached their therapeutic objectives. Patients who are overweight, inactive, and have bad eating habits might be particularly challenging to treat because of the additional factors of depression and a lack of social support. This pilot study examined simple and practical measures that our institution can frequently use to boost education and improve selfcare in our diabetes community.

Patients in both groups, including the control group, received the same level of primary diabetes education. After a year of follow-up, everyone showed significant gains in

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understanding the illness. Patients' adherence to the diet plan improved only for those who received a six-month reinforcing educational course or monthly phone calls from one of the doctors. The latter group also showed markedly better medication and insulin application adherence. This is in contrast to the findings of another study, which suggested that a diabetes education programme that included monthly robocalls was no more effective than a less rigorous programme that lasted only six weeks (Jia et al., 2019; Reza Gholami et al., 2020).

Age, body mass index and diabetes duration were evaluated as independent variables in multivariate analyses and multiple logistic regression to determine their influence on the differences seen over a year. Only in terms of regular exercise participation was there even a hint of a correlation. Patients contacted via phone reported lower body mass indexes and higher rates of regular exercise. Depressive symptoms were the strongest predictor of nonadherence to treatment in a prior study conducted at our Institute, including people with type 2 diabetes. Furthermore, we demonstrate that some initial results are lost if knowledge and actions are not reinforced.

More intensive and targeted efforts are needed to achieve significant reductions in the prevalence of depression and diabetes-associated emotional dysfunction, neither detected in the present investigation. Younger patients tended to have more emotional problems as a result of diabetes. This often leads to less-than-ideal metabolic management, increased hospitalizations, and difficulties. Possibly due to the small number of patients included in each group, the fact that it was not intended to influence the treatment of patients by their physicians, and the fact that the three groups at the end of the study showed very similar adherence to drug treatment (>85%), the benefits in self-management with reinforcement strategies did not translate to benefits in glycemic control (Ortiz-Movilla et al., 2022).

Consistent with earlier research findings, patients with longer durations of diabetes had considerably higher HbA1c levels and a higher frequency of problems. There have to be significant reforms made to the way we treat chronic diseases like diabetes. Support from a multidisciplinary team is essential to ensuring that the patient has access to the prescribed treatment, reinforcing techniques, and enhancing self-care habits. Integrating diabetes personal care support programmes with intense, long-term follow-up by diabetes educators in tandem with standard medical care has been proven to have the most significant potential for success among the educational options studied (García-Franco et al., 2022).

CONCLUSION:

Successful long-term therapies require identifying each patient's specific barriers to treatment compliance. Patients with diabetes should be provided with educational support, their treatment plan should be kept as simple as possible, consultation attendance should be tracked, and each patient's efforts should be reinforced during each scheduled appointment. Patients' prognoses and health conditions can be improved with minimal interventions, such as monthly phone calls or educational reinforcement for those having trouble meeting their treatment goals (this cannot be provided to all patients).

In conclusion, glucose control is not always an indicator of the success of reinforcement strategies in helping people with diabetes improve their self-care behaviours. More in-depth, long-term research is required to show how these advantages affect patients' ability to heal and live their best lives.

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