Scholastic Medical Sciences

Research Article

Volume 3 Issue 1- 2025

Health assets for the control of Decompensated Diabetics: Retrospective Cohort Study

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Received: February 08, 2025; **Published:** February 27, 2025

Abstract

Background: The number of people suffering from type 2 diabetes mellitus (DM2) has been increasing globally, and it is estimated that by 2030 it will be the seventh leading cause of death in adults.

Objective: To evaluate the impact of an educational intervention on health assets in patients with decompensated DM2.

Material and Methods: Retrospective cohort study in 124 adult patients with decompensated DM2. The study group (n=63) received education on health assets and telephone medical consultation. The control (n=61) was only a regular telephone medical consultation.

Results: In the intervention group, a significant decrease in HbA1c was observed compared to the control (OR: 6.21, 95%CI 2.81 to 13.7). This finding was consistent in the subgroups of patients on insulin (OR: 5.0, 95%CI 1.03 to 24.28), mixed (OR: 3.56, 95%CI 1.05 to 12.05), and oral treatment alone (OR: 15.30, 95%CI 3.51 to 66.7).

Conclusions: The educational intervention in health assets has a positive impact on the variables associated with DM2, since they raise awareness among the diabetic population, providing them with knowledge about the disease, improve adherence to treatment and glycemic control of them.

Keywords: DM type 2, health promotion and prevention, educational interventions.

Introduction

Currently, type 2 diabetes mellitus (DM) is a disease that has become a serious public health problem worldwide. According to data reported by the International Diabetes Federation (IDF) in 2019, approximately 463 million people live with diabetes, with a global prevalence of 9.3% in individuals between 20 and 79 years of age. In South and Central America, type 2 DM affects 31.6 million people with a prevalence of 9.4%, and an estimated 41.9% of people are undiagnosed. In Chile, in 2017, the prevalence of people with type 2 DM or suspected of having it was 12.3% [1].

In this sense, Type 2 Diabetes Mellitus (DM2) is a multisystemic metabolic disorder, caused by various factors that cause a malfunction in the action of insulin or its secretion, leading to chronic hyperglycemia that puts the person at risk of specific macro and microvascular complications. The number of people with T2D has been increasing both globally and nationally; the World Health Organization (WHO) projects that DM2 will be the seventh leading cause of death in adults by 2030 [2].

Therefore, the public health approach should focus on the prevention of chronic diseases, emphasizing the reduction of risk factors in order to stop their progression, mitigate their consequences and generate barriers to disease, is gradually taking steps towards the positive health approach [3]. Positive health is a way of looking at actions in health, focusing on what makes individuals, families and communities increase control over their health and improve it. In this model that revitalizes health promotion, the concept of health assets becomes relevant. A health asset can be defined as any factor or resource that enhances the ability of individuals, communities and populations to maintain health and well-being [4,5].

It has been observed that people and systems that develop salutogenic capacities have better health outcomes than other approaches can demonstrate [6,7]. In recent years, publications related to the theory of salutogenesis and the health asset model have been increasing [7,8,9]. It has been shown that biological, functional, and subjective health assets are associated with changes in clinically relevant outcomes, such as functional impairment, need for consultation, and mortality [10].

In Chile, the latest National Health Survey (ENS) in 2017 reports a prevalence of 12.3% in terms of suspected diabetes mellitus, compared to 9% in the ENS of 2018 and 6.3% in 2003. Considering this information, it is observed that in the population under 45 years of age between 2010 and 2017, the suspicion of diabetes mellitus increased from 4.2% to 8.1%, which is related to a greater increase compared to other age groups. However, the differences between the data from both NHS do not allow differentiating the population with DM1 and DM2, making it difficult to estimate with certainty the increase in early-onset DM2 in young patients in Chile [1].

Likewise, the application of the salutogenic model and identification of health assets in decompensated diabetic patients could increase control over their health to improve it, by facilitating the use of resources, improving their metabolic control and achieving a better level of well-being, personal satisfaction and perceived self-control. In recent years, publications related to the theory of salutogenesis and the model of assets for health have been increasing [7,8,9]. However, there are still few publications on asset-based interventions and their real impact on improving health outcomes.

In view of the above, this research work is carried out with the aim of evaluating the impact of an educational intervention on health assets in patients with decompensated DM2.

Material and Methods

We conducted a retrospective cohort analytical study in the context of the COVID-19 pandemic, between August 2020 and March 2021 at the Cienfuegos Family Health Center (CESFAM) in Viña del Mar, Chile. CESFAM is part of the public Primary Health Care (PHC) network.

Eligibility Criteria

We included patients over 18 years of age, under control at CESFAM Cienfuegos, with a medical diagnosis of DM2, who at the time of eligibility were decompensated. We defined decompensated DM2 as glycosylated hemoglobin (HbA1c) greater than or equal to 8%, regardless of its comorbidities or complications.

We excluded patients with gestational diabetes, type 1 diabetes, or hyperglycemia without a medical diagnosis of diabetes. We also excluded patients with a diagnosis of moderate or major dependence, with difficulties in communicating fluently orally, or without data or means of telephone contact.

Description of interventions

In the context of the COVID-19 pandemic, medical controls were established via telephone for users with decompensated DM2 at CESFAM Cienfuegos, in order to maintain remote contact with these patients who, given the health contingency and mobility restrictions, could not attend their face-to-face controls as usual.

Under these circumstances, a form was requested with the list of decompensated DM2 patients that merited priority telephone control to know their current state of health, adherence to pharmacological and non-pharmacological treatment, presence of decompensation symptoms, consultations in emergency services and/or hospitalizations, prescription renewals, updating of exams, and thus, despite health restrictions and making use of available technologies, to have the population in charge under control. This intervention was performed on all patients contacted by the team, leaving as usual, a record in the AVIS clinical record of each of them.

Additionally, and as part of the tasks that the Family Medicine Resident must perform, especially in terms of educational activities, some of these patients, with prior authorization and oral consent, agreed to have a second telephone call of approximately 10 minutes, for an educational intervention in health assets, consisting of the application of a semi-structured interview that seeks to make the user recognize their own resources. and through them, generate improvements in their health condition. Annex 1 provides details of the educational intervention in health assets carried out at CESFAM. All patients, both those who received the active intervention and those who received only the usual call, were asked for laboratory tests, including glycosylated hemoglobin (HbA1c) to be performed 8 weeks after the calls, the results of which were recorded in their personal clinical file.

Data collection

The data were collected from an anonymized database. The following variables were collected from each individual: sex, age, intervention received (usual control and health assets, or only usual control), initial HbA1c, HbA1c after educational intervention.

Outcomes

The following outcomes were considered:

- Decrease in HbA1c of at least 1%, two months after recruitment.C
- Change in HbA1c as a continuous variable, two months post-recruitment.

Statistical analysis

We used descriptive statistics with absolute frequencies and percentages for categorical variables, median with interquartile range for continuous variables with nonparametric distribution, and average with standard deviation for continuous variables with parametric distribution. To evaluate the effectiveness of the intervention for the reduction of HbA1c by at least 1% (as a dichotomous variable), we will use Fisher's exact test. To assess the change in HbA1c after the intervention (as a continuous variable), we used Student's T.

Results

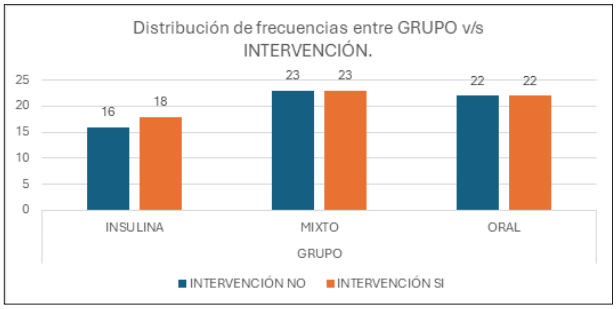
Population Coverage

The population of the study "Health assets for the control of decompensated diabetics: CESFAM Cienfuegos Retrospective Cohort Study of Viña del Mar 2020-2021" was composed of 124 diabetic patients assigned to CESFAM, who attend medical control and treatment in the Outpatient Consultation, Emergency and Internal Medicine services, of which 63 were those who received the educational intervention and 61 who did not. The results obtained are presented below:

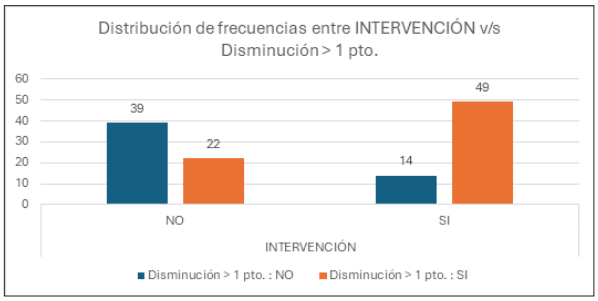
		INTERVENTION			
		Frequency	Percentage	Valid percentage	Cumulative percentage
INTERVENTION:	NO	61	49,2	49,2	49,2
	YES	63	50,8	50,8	100

Table 1

Analysis: Of the total of 124 patients who are enrolled in the diabetic patient program of CESFAM Cienfuegos in Viña del Mar, 50.8% received the educational intervention, while 49.19% of the patients did not receive the educational intervention.



Graph 1



Graph 2

Difference in Hb1AC at the beginning and after the intervention comparing control patients vs. operated patients

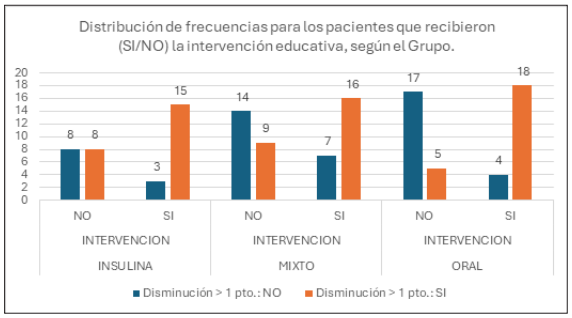
Cross table Decrease > 1 pt.*INTERVENTION

		Recount		
		INTERVENTION		Total
		NO	YES	
Decrease > 1 pt.	NO	39	14	53
	YES	22	49	71
Total		61	63	124

Table 2

Analysis: Of the total of 124 patients enrolled in CESFAM Cienfuegos in Viña del Mar, 71 patients had differences in HbA1C at the beginning and at the end of the educational interventions, of which 49 patients were in the group that received educational interventions and the other 22 patients were in the control group (They did not participate in the educational interventions).

Now, in relation to control patients vs. operated patients who presented modifications according to the treatment they receive, we have:



Graph 3

Risk Estimation INTERVENTION

GROUP		Value	95% confidence interval	
			Inferior	Superior
INSULIN	OR	5,000	1,030	24,279
	N of valid cases	34		
MIXED	OR	3,556	1,049	12,052
	N of valid cases	46		
ORAL	OR	15,300	3,509	66,705
	N of valid cases	44		
Total	OR	6,205	2,813	13,687
	N of valid cases	124		

Table 3

Analysis: Of the 124 patients enrolled in CESFAM Cienfuegos in Viña del Mar, 34 patients received insulin treatment, of which 23 patients had changes in HbA1c at the end of the intervention, of these 15 participated in the educational interventions and 8 belonged to the control group.

Similarly, 46 patients received mixed treatment (insulin, oral), of which 25 patients presented changes in HbA1c after finishing the intervention, of these 16 belonged to the group of those operated on and 9 to the control group.

Finally, 44 patients received oral treatment, of which 23 presented a change in HbA1c at the end of the intervention, of these 18 belonged to the group of those operated on and 5 to the control group.

Discussion

After analyzing the results obtained in the research, it can be said that educational interventions are effective in the control of uncontrolled diabetic patients regardless of the treatment they are taking, since there was evidence of a decrease in HbA1c values at the end of the educational intervention in most of the operated patients compared to patients in the control group.

It should be noted that various studies have shown that people with DM2 have a deficit of knowledge about their disease, which can affect the acceptance and integration of the therapeutic regimen (Leal, 2017).

Similar results to our research were those obtained by Figueira (2017), where they demonstrated that the educational intervention in Diabetes was effective in improving knowledge of the disease, in adherence to medication treatment and in glycemic control of people with DM2.

During the research, it was shown that more than 75% of the patients who participated in the study had greater control of diabetes at the end of the educational sessions compared to those in the control group. In this sense, the importance of carrying out educational sessions in the diabetic population is demonstrated, focused on health promotion and prevention in order to reduce morbidity and mortality in these patients and improve their quality of life.

Conclusions

The results obtained in this research suggest that educational interventions are a strategy that raise awareness among the diabetic population, since they provide knowledge about the disease, improve treatment adherence and glycemic control of people with DM2. Therefore, these educational sessions can be implemented at all levels of health care, in order to offer people with type 2 DM tools for the development of skills for the care of the disease.

It is necessary to carry out educational interventions focused on raising awareness among the general population about the importance of regular physical activity, as well as maintaining a healthy diet, to reduce risk factors that increase the prevalence of non-communicable diseases such as diabetes mellitus, which affects the quality of life of both the patient and their family environment.

It should be noted that future research related to health promotion and prevention for the diabetic population should be carried out, in order to avoid complications that put the patient's health at risk and maintain optimal metabolic control in the management of the disease.

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