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Relationship between Type of Family and its Relationship to Metabolic Control in Patients with Type 2 Diabetes Mellitus

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Abstract

Objective: To estimate the association between familiar function and metabolic control in patients with T2DM treated in a DiabetIMSS module in a first-level medical unit in Cancun, Quintana Roo, Mexico.

Methods: A cross-sectional, prospective and analytical study was conducted. In patients with T2DM and the target population included patients with T2DM who attended the module DiabetIMSS in Cancun, Quintana Roo. Included patients with T2DM between 20 and 80 years of age who received attention in a control module DiabetIMSS for a period of time greater than 3 months. All patients underwent an interview where general data (sex, age, date of diagnosis of T2DM, treatment, family characteristics) were collected. The metabolic control described by the criteria of the Latinamerican Diabetes Association (ALAD). The independent variable (familiar function) was assessed by questionnaire FACES III (Family Adaptability and Cohesion Evaluation Scales) adapted and validated in Spanish.

Statistical analysis: The association between metabolic control and degrees of familiar dysfunction were performed using the chi-square test statistic.

Results: A total population of 169 patients was included, 109 females (65%), with a mean age of 57 ± 3 years. 66 of patients (39%) were categorized as controlled. Patients with T2DM without metabolic control, live in dysfunctional family units, less fit and inflexible.

Conclusion: There is a relationship between family type and metabolic control in patients with T2DM.

Keywords

Diabetes mellitus type 2, Family conflict

Introduction

Type 2 Diabetes Mellitus (T2DM) is the most prevalent chronic disease in the world. In Mexico its prevalence has increased from 7.7% to 12.3% over recent years [1]. Regarding metabolic control, beside pharmacological treatment, other factors are involved, such as familiar ones [2]. The patient may perceive himself as a problem in the family core, resulting in therapeutic attachment failures [3].

Family dysfunction is defined as the unfulfillment of primary functions in relationships, such as affection, socialization, self-care and reproduction; these characteristics may condition role changing within family dynamics.

The Mexican Social Security Institute (IMSS) has, since the last decade, created a program called DiabetIMSS, designed for first and second level medical units in order to implement multidisciplinary maneuvers in patients with T2DM. This maneuver includes such aspects as familiar spectrum and metabolic control [4].

Objective

To estimate the association between familiar function and metabolic control in patients with T2DM treated in a DiabetIMSS module in a first-level medical unit in Cancun, Quintana Roo, Mexico.

Methods

A cross-sectional, prospective and analytical study was conducted. The universe was patients with T2DM and the target population included patients with T2DM who attended the module DiabetIMSS within the IMSS Familiar Medical Unit Number 16 in Cancun, Quintana Roo.

We included patients with T2DM between 20 and 80 years of

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Table 1: General characteristics of patients seen in PrevenIMSS

Variable	Frequency (%)
Age (years)*	57 ± 3
Sex	
Female	109(65%)
Male	60(35%)
Marital Status	
Married	125(74%)
Bachelor	6 (3.5%)
Divorced	38(22.5%)
Occupation	
Home	78 (46%)
Worker	56 (34%)
Pensioner	35(20%)
Time evolution (years)*	8.2 ± 2
Diabetes control	66 (39%)

*Media (Standard Deviation)

age who received attention in a control module DiabetIMSS for a period of time greater than 3 months; patients completely answered questionnaires and signed informed consent letter. We excluded subjects with chronic kidney disease and cancer, psychiatric illness besides depression, history of myocardial infarction or bariatric treatment. Patients who withdrew their informed consent were removed.

All patients underwent an interview where general data (sex, age, date of diagnosis of T2DM, treatment, family characteristics) were collected; a trained physician unrelated to the patient's care applied a validated questionnaire which was graded by an independent researcher. In the same query biochemical profiles were measured and the treating physician classified the patient as controlled or uncontrolled.

Family dynamics is classified according to functionality (functional, dysfunctional), adaptability (chaotic, flexible, structured, and rigid) and cohesion (agglutinated, related, semi-related and unrelated). And one for the variable family functioning FACES III (Family Adaptability and Cohesion Evaluation Scales) adapted and validated in Spanish [5]. This was done through a direct interview until the total sample was obtained, previous explanation by the researcher about the importance; the survey had to be answered considering the way that the patient actually considered his/her family and not considering the way in which he should react.

The Faces III questionnaire is an instrument designed with Likert technique, taking in consideration in its final version a total of 40 items, of which 20 items describe the family in its present situation, and 20 items describing how would the family should be. Each item of the scale has 5 answering options, with scores ranging from 1-5 points: Almost never (1 point) Never (2 points), Sometimes (3 points), Always (4 points), Almost always (5 points). Based on the total score for each dimension 8 types of families are categorized.

In the case of cohesion, it was obtained by adding the scores on the odd items.

For adaptability, it was obtained by adding the pair items, and the following parameters were considered:

The ends (represented by the lower and higher scores) represented dysfunctional families and the middle values represented functional ones. When cohesion and adaptability dimensions were added, we searched for the scores obtained on each of the class amplitudes (on the table) and interpretation to use them on data analysis.

For the overall score for the type of family, cohesion and adaptability scores are added and divided by 2, the interpretation of scores of family type indicated in Table linear and interpretation score

Independent variable: familiar functionality: Is reached when family or functions objectives are completely fulfilled (safety, economic, emotional, social and sexual models) and when the purpose is obtained (to generate new individuals to society) in a homeostasis

Table 2: Differences in the type of families of patients with Type 2 Diabetes Mellitus

	Controlled n=66	**No Controlled n=103**	***p* Value**
Family dysfunction	29(44%)	59(56%)	**<0.0001**
Cohesion-bonded	13(19%)	5 (5%)	**0.04**
Cohesion-related	9 (13%)	20(20%)	0.1
Cohesionsemi-related	17(26%)	44(43%)	**0.02**
Cohesion-unrelated	27(41%)	33(33%)	0.2
Adaptability-chaotic	29(30%)	62(61%)	**<0.0001**
Adaptability-inflexible	16(25%)	40(39%)	**0.03**
Adaptability-rigid*	3 (5%)	2(3%)	0.4

X^2

*Fisher test

without any tension, through appropriate communication and based on respect of inner family relations.

The outcome variable: was metabolic control, described by the criteria of the Latinamerican Diabetes Association (ALAD) with the following parameters: glycosylated hemoglobin less than 6.5mg/dL, fasting blood glucose less than 100mg/dL and two of the following items: triglycerides less tan 150mg/dL, total cholesterol less than 200mg , low density cholesterol (LDL) less than 100mg/dL, high-density cholesterol (HDL) greater than 40mg/dL and blood pressure under 130/85mmHg [6].

The sample size was calculated considering that 16.5% have metabolic control using the formula for the calculation with finite population supported StatCalc module in Epi-Info with a confidence level of 95%, an expected error of 5% and a power 95% in a population of 680 patients with T2DM attending DiabetIMSS module. A sample size of 190 patients was obtained. The protocol was submitted and approved by the local Research Ethics Committee.

Statistical Analysis

Frequencies and percentages were used for qualitative variables, and measures of central tendency (mean) and dispersion (standard deviation) for quantitative variables. The association between metabolic control and degrees of familiar dysfunction were performed using the chi-square test statistic. The statistical package used was SPSS version 18 for Windows.

Results

A total population of 169 patients was included, 109 females (65%), with a mean age of 57 ± 3 years. 66 of the total 169 patients (66%) were categorized as controlled. The other features are shown in Table 1.

Dysfunctional families, Cohesion bonded, semi-related cohesion, adaptability and inflexible chaotic adaptability: Regarding family characteristics and control of DM2 significant differences were found (Table 2).

Discussion

In the group of 190 patients, we found that 71% were uncontrolled, which resembles the 66% previously reported.

It is a known fact that not only the patient with T2DM, as well as the treatment of the disease is involved in glycemic control. Support networks and familiar function are vital for the patient with T2DM to assume responsibly the disease process [7].

Our family dysfunction rate was 44%, which shows that there is a significant relationship between uncontrolled patients and dysfunctional families compared with those with functional ones. On this regard, the American Diabetes Association, described that there is an OR=3.3 (95 % 1.24 - 8.83) for those patients with poor metabolic control and family dysfunction [8]. In Mexico, in 2004, a frequency of 64% was described in 300 patients with T2DM with poor metabolic control [9].

The questionnaire used in this study also considers other features not described, such as cohesion and adaptability. Cohesion, understood as the emotional bond within the family members, shows that closer or agglutinated bonds are significantly more frequent in patients with metabolic control; and semi-related bonds have a greater presentation in the uncontrolled ones [10].

Also, adaptability is considered as the possibility of leadership change, relationship roles and normalization of the relationship between family members. In this population, families with chaotic and inflexible adaptability mechanisms were associated with a greater extent in uncontrolled patients [11].

Our results show the association between the successful control of diabetes and familiar mechanics, marking an edge to perform studies that may link this relationship.

The weaknesses of this study are the lack of monitoring and comparison with potential confounders directly related to therapeutic failure such as comorbidities, treatment, etc. A cohort study in which the control of covariates is justified to weigh the risk according to the type of family.

Conclusions

Familiar dysfunction presents itself significantly more often in uncontrolled T2DM patients and families with weak systems of cohesion and adaptability less flexible behaviors are mostly related.

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