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EVALUATION OF THERAPEUTIC ADHERENCE OF PATIENTS WITH DIABETES MELLITUS TYPE 2

EVALUATION OF THERAPEUTIC ADHERENCE OF PATIENTS WITH DIABETES MELLITUS TYPE 2

EVALUACIÓN DE LA ADHESIÓN TERAPÉUTICA DE LOS PACIENTES CON DIABETES MELLITUS TIPO 2

Maria do Socorro dos Santos Oliveira¹, Iaponira Cortez Costa de Oliveira², Maria Edilânia Silva Amorim³, Rosemari Otton⁴, Matheus Figueiredo Nogueira⁵

ABSTRACT

Objective: to evaluate the therapeutic adherence of patients with Diabetes Mellitus Type 2 (DM2). **Method:** transversal descriptive study, of quantitative nature, performed with 60 DM2 patients followed at the University Hospital Lauro Wanderley (UHLW) in João Pessoa/PB, Brazil. Data were collected through a questionnaire and analyzed by univariate exploratory statistical, bivariate inferential, after project approval by the Research Ethics Committee, CAAE 0082.0.126.000-08. **Results:** women predominated among the 51 to 60 years, housekeeper, with elementary education, income of a minimum wage and with complications of the disease, especially cardiovascular. Difficulties in non-pharmacological treatment were reported by 90% of participants and the family is considered as a facilitator aspect of adherence. **Conclusion:** the behavioral changes required in the therapeutic management of DM2 are the factors potentially involved in adhesion, thus compromising the disease control and quality of life if not followed carefully. **Descriptors:** Diabetes Mellitus; Patient Compliance; Therapy.

RESUMO

Objetivo: avaliar a adesão terapêutica de pacientes com Diabetes Mellitus Tipo 2 (DM2). **Método:** estudo descritivo transversal, de natureza quantitativa, realizado com 60 pacientes com DM2 acompanhados, no Hospital Universitário Lauro Wanderley (HULW) em João Pessoa/PB, Brasil. Os dados foram obtidos por meio de questionário e analisados por estatística exploratória univariada, inferencial bivariada, após aprovação do projeto pelo Comitê de Ética em Pesquisa, CAAE 0082.0.126.000-08. **Resultados:** predominaram mulheres entre os 51 aos 60 anos, do lar, com ensino fundamental, renda de um salário mínimo e com complicações da doença, principalmente cardiovasculares. Dificuldades no tratamento não medicamentoso foram relatadas por 90% dos participantes e a família é considerada como aspecto facilitador da adesão. **Conclusão:** as mudanças comportamentais exigidas no manejo terapêutico do DM2 são os fatores que intervêm potencialmente na adesão, comprometendo, assim, o controle da doença e a qualidade de vida quando não seguidas criteriosamente. **Descritores:** Diabetes Mellitus; Cooperação do Paciente; Terapêutica.

RESUMEN

Objetivo: evaluar la adhesión terapéutica de los pacientes con Diabetes Mellitus tipo 2 (DM2). **Método:** estudio descriptivo transversal, de naturaleza cuantitativa, realizado con 60 pacientes con DM2 acompañados, en el Hospital Universitario Lauro Wanderley (HULW) en João Pessoa/PB, Brasil. Los datos fueron recolectados a través de un cuestionario y se analizaron mediante estadística uni-variante exploratoria, de inferencia bi-variados, después de la aprobación del proyecto por el Comité de Ética de la Investigación, CAAE 0082.0.126.000-08. **Resultados:** predominaron las mujeres entre los 51 a los 60 años, amas de casa, con educación primaria, con ingreso de un salario mínimo y con complicaciones de la enfermedad, principalmente cardiovasculares. Las dificultades en el tratamiento no farmacológico fueron reportados por 90% de los participantes y la familia se considera como un aspecto facilitador de la adhesión. **Conclusión:** los cambios de comportamiento exigidos en el manejo terapéutico del DM2 son los factores que intervienen potencialmente en la adhesión, comprometiendo así, el control de la enfermedad y la calidad de vida si no se respetan escrupulosamente. **Descriptors:** Diabetes Mellitus; Cooperación del Paciente; Terapia.

¹Clinical Nurse, Master of Health Sciences, University Hospital Lauro Wanderley/UHLW. João Pessoa (PB), Brazil. Email: socorrosantossantos@hotmail.com; ²Biologist, Post-Doctorate Professor in Biological Sciences, University Cruzeiro do Sul Sao Paulo (SP). Email: rosemariotton@hotmail.com; ³Care Nurse, PhD in Health and Hospital Management, University Hospital Lauro Wanderley/UHLW. João Pessoa (PB), Brazil. Email: iaponiracortez@yahoo.com.br; ⁴Clinical Nurse, Master of Health Sciences, University Hospital Lauro Wanderley/UHLW. João Pessoa (PB), Brazil. Email: mariaedilaniaamorim@hotmail.com; ⁵Nurse, Master Professor in Nursing in Health Care Nursing Course, Center for Education and Health, Federal University of Campina Grande/UFCG. Grande Campina (PB) Brazil. Email: matheusnogueira.ufcg@gmail.com

INTRODUCTION

Diabetes Mellitus (DM) is a chronic disease of multiple etiology resulting from a deficiency in production of insulin by the pancreas and/or the inability of this to properly exert its effects in the body, resulting in insulin resistance. It is characterized by the presence of chronic hyperglycemia and is often accompanied by dyslipidemia, hypertension and dysfunction in various organs such as kidneys, heart, blood vessels and nerves.^{1,2}

Most cases of DM is included in two categories defined according to its pathogenesis, which are diabetes type 1 and type 2. Diabetes Type 1 is a group of metabolic changes, autoimmune, resulting from the selective destruction of pancreatic beta cells, that affects mainly children and adolescents, but can occur with less frequency in adults, in situations of large organic stress. Type 2 is defined as a metabolic disorder characterized by insulin resistance and relative deficit in the production of this hormone, whose emergence is associated not only to genetic factors but also environmental factors as a lifestyle marked by physical inactivity, high-fat diets and body weight gain.^{3,4}

In our times, the DM is configured as a global epidemic. Data from the International Federation of Diabetes⁵ indicate that, in 2011, the population with the disease surpassed 366 million and projected to reach 552 million by 2030, if prevention and control measures are not taken urgently. Moreover, in the context of public health, it is observed that this disease comprises a considerable economic burden to the individual and to society, especially when poorly controlled, being the most of its direct costs related to treatment complications, which compromise productivity, quality of life and survival of individuals.¹

As intervention measure, the beginning of a therapeutic plan composed of multidisciplinary educational actions and is considered a very important procedure because it seeks to help the diabetic to incorporate preventive measures and proper treatment. This set of measures includes, for example, to follow a balanced diet, to perform planned physical activity, to identify and treat organic complications and, if necessary, to use medicines to control glycemia. When the action for intervention is defined, the diabetic patient presents a decisive function regarding the progression of the therapeutic plan, since it is a

responsibility of the patient, autonomously, to adhere the professional recommendations through self-care and maintain them through the incorporation of a new lifestyle.⁶

Empirical research performed with diabetic patients in nursing, especially during consultations in outpatient endocrinology, expose difficulties of adherence to treatment by patients, despite continued guidance regarding the disease and its complications, diet, physical activity and medication. These observations indicate that factors such as family, social, economic and cultural issues can negatively interfere with the aforementioned adherence.

Given that within the health service, studies that focus on the analysis of the factors that hinder or facilitate the adherence of diabetic patients are limited, this study aims to evaluate the adherence of patients with DM Type 2, with emphasis on facilitate or hamper factors.

METHOD

Article elaborated from the dissertation << **Evaluation of therapeutic adherence in patients with diabetes mellitus type 2** >> presented to the Postgraduate Course Coordination (Masters Level) of the University of Cruzeiro do Sul, Sao Paulo/SP, 2010.

Transversal exploratory-descriptive study, performed at the Clinic of Endocrinology, specifically in the DM sector of University Hospital Lauro Wanderley (UHLW), located on the campus of the Federal University of Paraíba (UFPB). The endocrinology service is formed by a multidisciplinary team of physicians, nurses and nutritionists. This local was chosen because it is considered a reference in the care of diabetic patients in the state of Paraíba.

The study population consisted of 300 patients with DM type 2 registered in endocrinology service UHLW/UFPB. The sample was selected randomly, and being considered eligible for the study, by the representativeness of the population universe, 60 participants. The following inclusion criteria were used: having diagnostic confirmation of DM type 2, to present age above 18 years, to agree to sign an Informed Consent Form (ICF) and present physical and mental condition to answer the questionnaire.

Data collection was conducted in November and December 2010, by using the interview technique and subsidized by a validated questionnaire with objective and subjective questions, which were grouped into four categories of variables. The first comprised the data regarding sociodemographic

characteristics of the subjects; the second was related to adherence to treatment profile of DM type 2; the third contemplated the data oriented factors hindering adherence to treatment; and fourth aimed to seek data related on facilitating conditions of therapeutic adherence.

Data were analyzed using the *Statistical Package for Social Sciences* (SPSS) version 13.0 for *Windows*. The categorical variables were analyzed in a nominal and ordinal form (some of dichotomous type of positive and negative responses), and quantitative were measured on an interval scale. Initially, it was performed the coding of relevant variables and data consistency was measured. Then, for the survey of sociodemographic profile of the sample, it was performed the statistical analysis through the construction of simple and joint frequency tables or variables crossing (joint frequency tables), as well as of statistics figures. The univariate exploratory statistics and bivariate inferential for contingency tables, with the use of chi-square association test (χ^2) were used for data analysis. The adopted level of significance was $p<0.05$.

The survey was conducted according to the observances of Resolution No. 196/96 of the National Health Council, whose project was approved by the Ethics Committee in Research of UHLW/UFPB, under No. 108/2008 protocol, CAAE No 0082.0.126.000-08.⁷

RESULTS

The sociodemographic characteristics of the sample are presented as absolute frequency (n) and relative (%) in Table 1, containing separated data by gender, age, marital status, family income and occupation.

There was a predominance of married women, aged between 51 and 60 years old, housekeepers with complete/incomplete primary education and monthly income of a minimum wage.

In relation to treatment adherence (Figures 1, 2 and 3), the majority (65%) have diagnosis for a period of 6 to 15 years, 60% had complications of the disease, especially 72% with cardiovascular complications. Regarding to the treatment, two modes are evidenced: non-medicated and medicated. Difficulties in the treatment were reported by the participants, 90% to non-medicated and 13% to medicated. The frequency to health services occurs for the majority (55%) on a monthly basis. As for the complicating factors of treatment, the lack of financial resources was highlighted. Regarding to the family, this was identified as a facilitating factor for 57% of the participants.

In terms of found results between the data crossing of sociodemographic variables and glycemic control (at least one measure in triplicate below 140 mg/dL) presented in Table 2, the only result that showed significance was the variable of the age, whose χ^2 test resulted in significance of $p=0.033$. The other sociodemographic variables showed no significance when crossed with the results of blood glucose control.

It is understandable, therefore, that among the sociodemographic variables profile, age is the only one who interferes in glycemic control rates. Thus, uncontrolled blood glucose contributes to the worsening of the condition of the patient, which leads to understand that adherence to treatment is compromised.

Table 1. Sociodemographic profile of patients affected by DM type 2, João Pessoa/PB, 2010 (n = 60).

Sociodemographic Profile	Total		Gender of participants			
			Male		Female	
	N	%	n	%	n	%
Age Group						
31 a 40 years	6	10,0	1	3,8	5	14,7
41 a 50 years	13	21,7	5	19,2	8	23,5
51 a 60 years	24	40,0	12	46,2	12	35,3
61 a 70 years	11	18,3	6	23,1	5	14,7
Above 70	6	10,0	2	7,7	4	11,8
Marital Status						
Single	7	11,7	1	3,8	6	17,6
Married	39	65,0	20	76,9	19	55,9
Widower	7	11,7	2	7,7	5	14,7
Separated	7	11,7	3	11,5	4	11,8
Schooling						
Illiterate	2	3,3	1	3,8	1	2,9
Primary School (complete / incomplete)	36	60,0	16	61,5	20	58,8
High School (complete / incomplete)	19	31,7	8	30,8	11	32,4
Higher Level	3	5,0	1	3,8	2	5,9
Family Income (xs.m.)						
Less than 01 minimum wage	8	13,3	2	7,7	6	17,6
01 minimum wage	21	35,0	10	38,5	11	32,4
2 to 3 minimum wages	30	50,0	14	53,8	16	47,1
4 a 5 minimum wages	1	1,7	-	-	1	2,9
Profession						
Home	18	30,0	1	3,8	17	50,0
Retired	13	21,7	8	30,8	5	14,7
Farmer	9	15,0	5	19,2	4	11,8
Merchant	9	15,0	5	23,1	3	8,8
Others	11	18,3	6	23,1	5	14,7
Total	60	100	26	43,3	34	56,7

Table 2. Crossing of glycemic control in relation to sociodemographic profile variables of patients interviewed, João Pessoa/PB, 2010 (n=60).

Sociodemographic Profile	Total		Control of Blood Glucose (one measure at least)				Test of χ^2 Sig. p-value
	n	%	Yes	No	Yes	No	
			n	%	N	%	
Sex ^a							0,224
Male	26	46,4	8	36,4	18	52,9	
Female	30	53,6	14	63,6	16	47,1	
Age Group ^b							0,033*
31 a 40 years	6	10,7	1	4,5	5	14,7	
41 a 50 years	12	21,4	3	13,6	9	26,5	
51 a 60 years	22	39,3	8	36,4	14	41,2	
61 a 70 years	10	17,9	7	31,8	3	8,8	
Above 70	6	10,7	3	13,6	3	8,8	
Marital Status ^b							0,212
Single	6	10,7	3	13,6	3	8,8	
Married	36	64,3	11	50,0	25	73,5	
Widower	7	12,5	5	22,7	2	5,9	
Separated	7	12,5	3	13,6	4	11,8	
Schooling ^b							0,356
Illiterate	2	3,6	1	4,5	1	2,9	
Incomplete Primary School	9	16,1	5	22,7	4	11,8	
Complete Primary School	24	42,9	8	36,4	16	47,1	
Incomplete High School	6	10,7	3	13,6	3	8,8	
Complete High School	12	21,4	5	22,7	7	20,6	
Higher Level	3	5,4			3	8,8	
Family Income (xs.m.) ^c							0,785
Less than 1 minimum wage	8	14,3	2	9,1	6	17,6	
1 minimum wage	20	35,7	9	40,9	11	32,4	
2 a 3 minimum wages	27	48,2	11	50,0	16	47,1	
4 a 5 minimum wages	1	1,8			1	2,9	
Total	56**	100	22	100	34	100	

*p<0.05; ^a Contingency Table 2x2; ^b Contingency table L x 2; ^c Linear trend; ** Of the total of 60 patients, four of them did not perform glucose test.

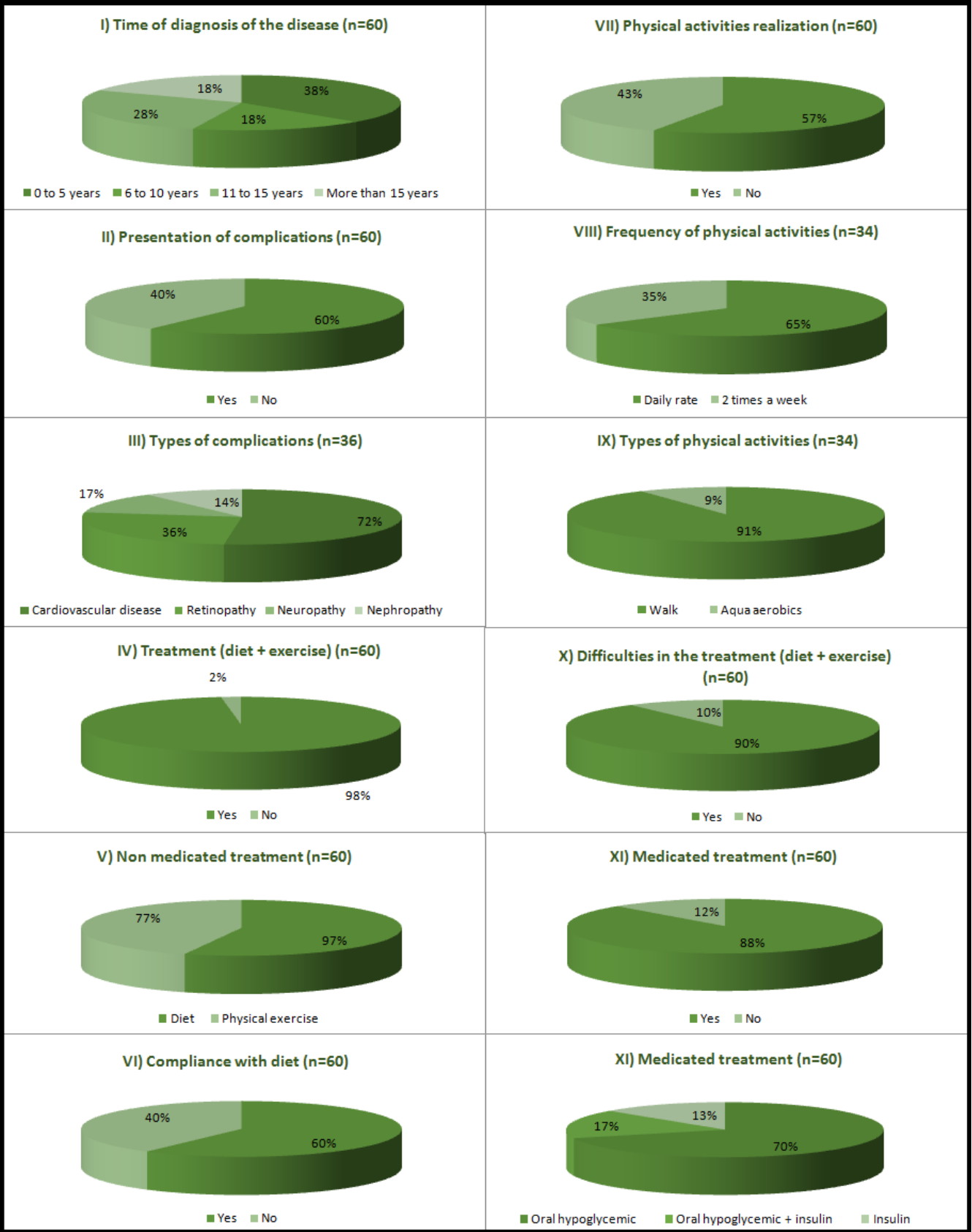


Figure 1. Data associated with adherence presented as numbers and percentages relating to the responses of the first 12 questions of the questionnaire used in the study.

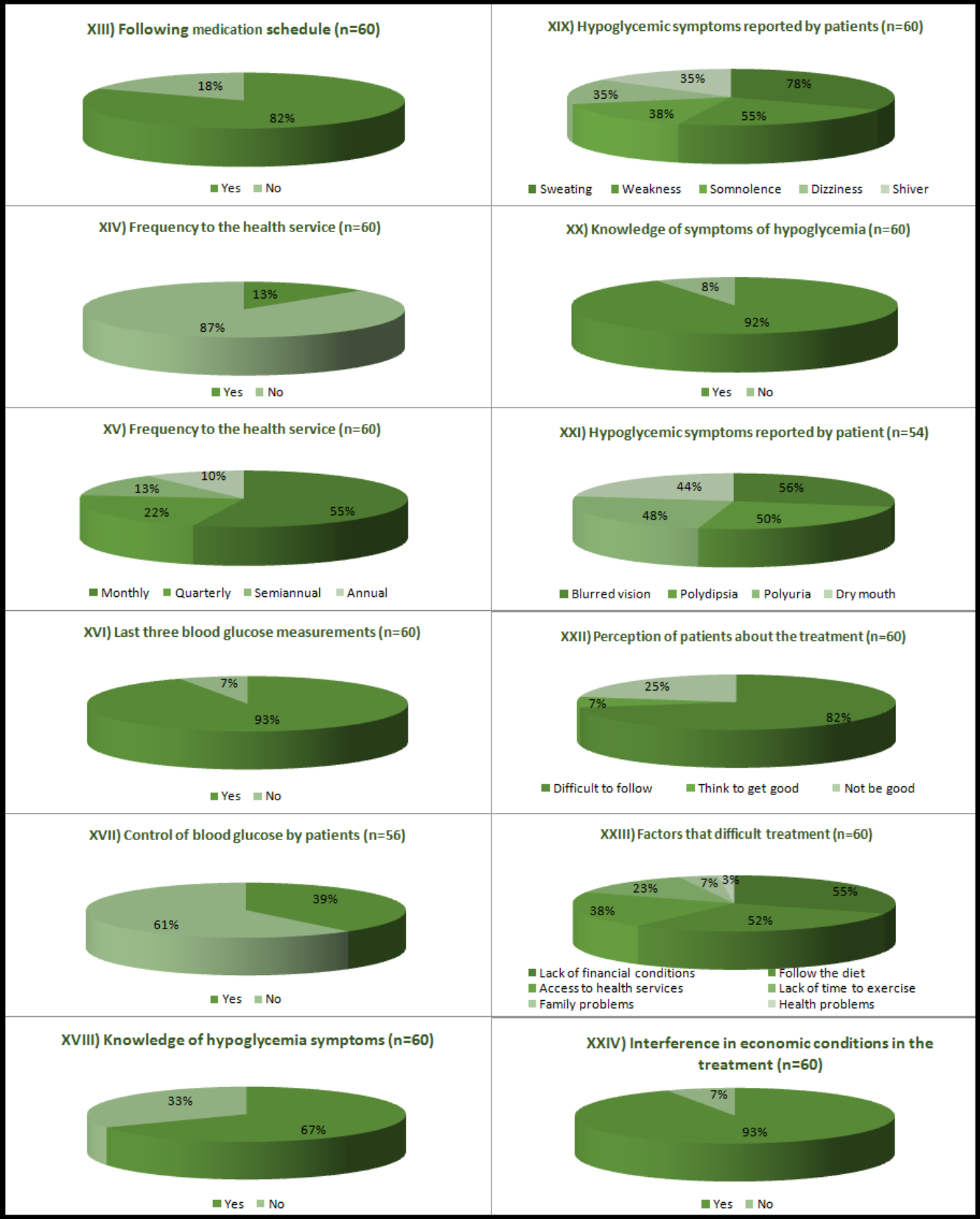


Figure 2. Data associated with therapeutic adherence presented in numbers and percentages relating to answers to questions 13 and 24 of the questionnaire used in the study.

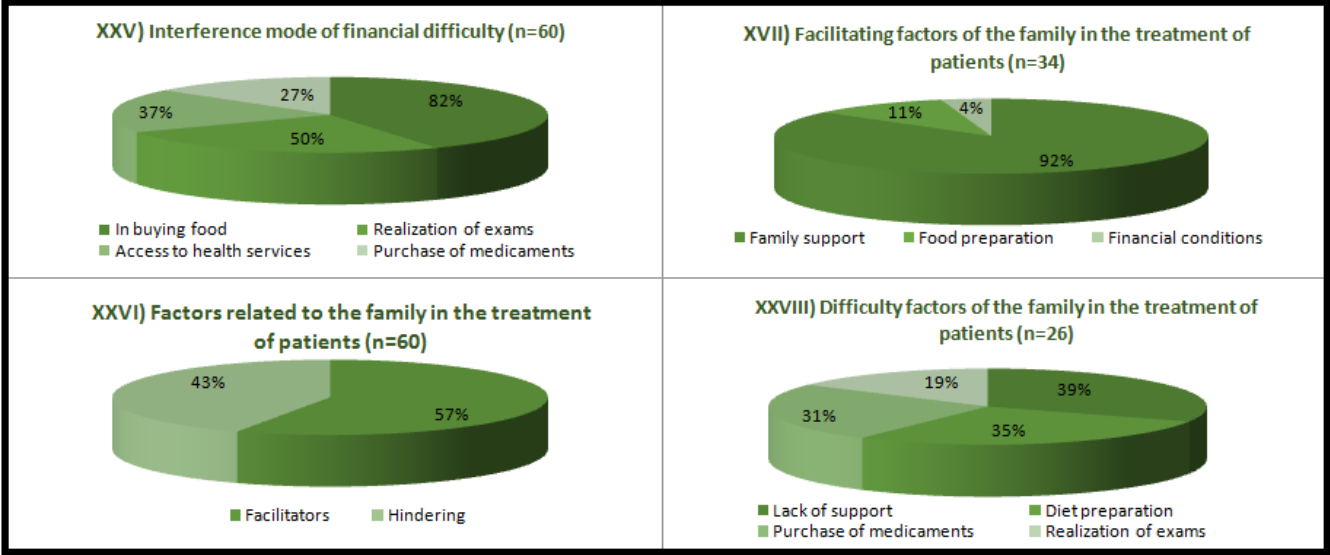


Figure 3. Data associated with therapeutic adherence presented in numbers and percentages relating to answers to questions 25-28 of the questionnaire used in the study.

DISCUSSION

The results of sociodemographic characteristics revealed that over half of the evaluated participants are female (56.7%), 40.0% are aged between 51 and 60 years old, 65.0% are married, 30, 0% are housekeeping, 60.0% have completed primary education and 50.0% have an average family income of 2-3 minimum wages.

About the female predominance identified in the present study, results in the literature corroborate these data,^{8,9} hypothesizing that women besides having greater care and concern with the disease when compared to men, are more informed about the harmful effects of diabetes about the body, a fact associated with higher frequency in the units of family health.¹⁰

Age, in turn, is considered a crucial factor for the development of DM type 2. The influence of age on the prevalence of disease and impaired glucose tolerance was well evidenced by the Multicenter Study about the Prevalence of Diabetes in Brazil, where was observed a variation of 2.7% for the age group of 30-59 years and 17.4% for 60-69 years; i.e., an increase of 6.4 times.¹¹ When comparing these data with those found in this study, it appears as the age favors the development of diabetes.

As for marital status factors, schooling, family income and profession, it can be stated that there is no conclusive data indicating how these points directly involve in adherence to treatment of DM type 2. However, the condition of living alone is a strong predictor for non therapeutic adherence signaling the importance of support from other people¹² and low education interferes with the understanding of the disease and therapeutic plans.⁹ Married, educated and with high family income people therefore, tend to have better adhesion, since there is a structure of support

associated to the emotional side of the patient including a financial base that allows not only the displacement to the treatment locals but also the acquisition of supplies and medicines when needed.

Regarding the factors involved in patient adherence with treatment, the data presented in Figures 1, 2 and 3 show that the non-medicated treatment consisting of diet and exercise was used by 98% of patients. Of this percentage, 97% used diet (prescribed by a nutritionist) as a method of control of blood glucose and 77% reported physical exercise aimed at controlling the disease. On the other hand, 88% of participants that used medicated treatment, and 70% of them composed of oral hypoglycemic agents, 17% hypoglycemic and insulin and 13% insulin only.

It is interesting to note that most participants (90%), who did not use medicaments, reported difficulties in continuing the treatment, with a completely opposite situation in the medicated treatment, in which only a small portion of the sample (13%) cited some annoyance or difficulty swallowing the necessary medicine. This information shows that physical exercise and diet, because they characterize the most significant changes in life habits, are frequently associated with difficulties in adherence, which does not occur with the medications.

Regardless of the type of treatment, non adherence leads patients to numerous complications due to chronic state of hyperglycemia caused by DM type 2. In the present study, 36 subjects who reported (in multiple response questionnaire) the existence of complications, 72% of them had some type of cardiovascular disease, 36% retinopathy, 17% neuropathy and 14% nephropathy. So, to avoid some of these complications, it is necessary to become effective interventions for health promotion

and prevention of complications, and the patient should be made aware of the importance of adopting behaviors and healthy lifestyle, considering their competence for training in self-determination, self-monitoring and self-control.¹³

To achieve satisfactory level of adherence to treatment, is necessary to overcome many difficulties, which were reported more frequently in the non medicated treatment. Among the difficulties highlighted in the two forms of treatment, it is emphasized the lack of financial resources (reported by 55% of patients), to achieve to continue the diet (52%), to have access to health services (38%), not having time for physical exercise (23%), presenting family problems (7%) and health problems (3%).

As was shown in this study, a significant portion of interviewed participants have family income up to the minimum wage (48.3%). This fact may justify the great difficulty that patients have in conducting the treatment, because, although the behaviors are of individual responsibility and follow the principle of freedom, they are strongly influenced by social determinants of health,¹⁴ such as the low socioeconomic condition, since the treatment of diabetes requires expenses for a balanced diet, medications (which are often lacking in health units), use of appropriate footwear and glycemic control.

However, not only the socioeconomic conditions constitute reason for non-adherence to treatment of patients with diabetes. Reasons such as the difficulty of following the diet, the use of hypoglycemic medications or insulin, poor time or lack of fitness to practice physical activities and non-acceptance of the disease, may also be reasons for the lack of commitment to the treatment of diabetes. Linked to these factors, inadequate training and integration between health professionals also relates to the problem of adherence, requiring the incorporation of the health services of new approaches to motivation and awareness of diabetic patients about adopting new habits and style life.¹⁵

It is relevant to note again that participants always made it clear during the interview that, despite all the difficulties imposed by diabetes treatment, the medicated treatment was always carefully followed, which did not also followed with diet and exercise, as being configured as "complicated" strategies to treatment. Thus, it is necessary to invest in patient awareness, and for this, health professionals need to be prepared to deal with the expression of

emotional experiences,¹⁶ supporting and educating them about the importance of appropriate therapeutic management for the control of complications and improve quality of life.

Additionally, besides the aforementioned factors that influence adherence to treatment of DM type 2, in the present study it was found that patients often do not have the health service within the required standards (55% monthly, 22% quarterly, 13% semi-annual and 10% annual) and despite monitor their blood glucose regularly, have values above 140 mg/dL, which is configured as a potentially troubling result.

As for glucose, when their values were crossed with sociodemographic profile variables among a significance test, the only significant obtained result was age, revealing $\chi^2 = 0.033$. Given this result, it is understood that sex, education, marital status and family income variables do not refer to significant interference in glycemic control and adherence to treatment of DM type 2.

When dealing with the factors that facilitate adherence to treatment, family support was highlighted in 57% of study participants, corroborating other studies¹⁷ showing that family participation positively help in controlling the disease, reduces the appearance of symptoms and complications, and improve self-esteem to deal with other strategies and guidelines that influence in reducing blood glucose.

CONCLUSION

The analysis of the factors involved in adherence to treatment of diabetes type 2, concluded that the non-medication treatment consisted of diet and exercise is not followed carefully as the medicated, since it requires lifestyle changes more meaningful and that factors that most hinder the accession process are, respectively, the lack of financial conditions, unable to continue the diet, to have access to health services, do not have time to physical exercise and present family and health problems.

Additionally, it can be concluded that patients do not have a frequency to the health service within the required standards and, despite they monitor blood glucose regularly, they present values above the recommended level, a result that was directly correlated with age variable. Regarding the factors that facilitate adherence to treatment, family support was highlighted by 57% of the study participants, showing that family participation is a key factor in the progression and maintenance treatment of diabetes type 2.

It is suggested that similar studies should be conducted with this sample collection periods and larger data, however, in contexts that have different socioeconomic levels, since it is very likely that the characteristics of the factors involved in the adhesion of diabetes mellitus type 2 are different, as the evaluated population.

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Corresponding Address

Matheus Figueiredo Nogueira
Rua Diógenes Chianca 881 / Ap. 101-B
Bairro Água Fria
CEP 58053-000 — João Pessoa (PB), Brazil