









ADHERENCE TO THE TREATMENT OF DIABETES MELLITUS AND RELATIONSHIP WITH ASSISTANCE IN PRIMARY CARE

ADESÃO AO TRATAMENTO DE DIABETES MELLITUS E RELAÇÃO COM A ASSISTÊNCIA NA ATENÇÃO PRIMÁRIA

ADHESIÓN AL TRATAMIENTO DE LA DIABETES MELLITUS Y RELACIÓN CON LA ASISTENCIA SANITARIA DE ATENCIÓN PRIMARIA

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ABSTRACT

Objective: to verify the association between adherence to medication and non-medication treatment and the care practices provided to people with type 2 diabetes Mellitus (DM2) by the Family Health Strategy (ESF) teams. **Method:** cross-sectional study, of the household survey type, carried out with people with DM2 registered in the 65 urban teams of the ESF, randomly selected and stratified by team. Data were collected in the first semester of 2014 through a structured interview and in the analysis, using logistic regression, considering a significant association when $p \leq 0.05$. **Results:** the 408 people participating had an average age of 66.5 years, 84.1% reported adhering to drug treatment, 29.4% performed regular physical activity and 24% had adequate nutrition. After adjustments, the variables that remained associated with drug treatment were non-participation in health education activities ($p=0.012$) and being attended by the same nurse ($p=0.048$). Regarding medication, the adoption of adequate nutrition was associated with quarterly capillary glycemia check ($p=0.011$) and being asked, during treatment, about the practice of physical activity ($p=0.012$) and the practice of regular physical activity with participation in health education activities ($p=0.031$), being satisfied with the assistance ($p=0.04$), being attended to on the same day that you sought the BHU ($p=0.017$) and the professionals asking about your health ($p=0.011$). **Conclusion:** people with DM2 showed good adherence to medication treatment and low adherence to non-medication, indicating that ESF teams need to expand the implementation of health promotion actions, prevention and control of the disease and its complications.

Keywords: Diabetes Mellitus; Primary Health Care; Treatment Adherence and Compliance.

RESUMO

Objetivo: verificar a associação entre a adesão ao tratamento medicamentoso e não medicamentoso e as práticas assistenciais prestadas às pessoas com diabetes Mellitus tipo 2 (DM2) pelas equipes da Estratégia Saúde da Família (ESF). **Método:** estudo transversal, do tipo inquérito domiciliar, realizado com pessoas com DM2 cadastradas nas 65 equipes urbanas da ESF, selecionadas aleatoriamente e de forma estratificada por equipe. Os dados foram coletados no primeiro semestre 2014 mediante entrevista estruturada e na análise, usando-se regressão logística, considerando-se associação significativa quando $p \leq 0,05$. **Resultados:** as 408 pessoas participantes tinham idade média de 66,5 anos, 84,1% relataram aderir ao tratamento medicamentoso, 29,4% realizavam atividade física regularmente e 24% tinham alimentação adequada. Após ajustes, as variáveis que permaneceram associadas ao tratamento medicamentoso foram: não participação em atividade de educação em saúde ($p=0,012$) e ser atendido pelo mesmo enfermeiro ($p=0,048$). Em relação ao medicamentoso, a adoção de alimentação adequada apresentou associação com verificação trimestral da glicemia capilar ($p=0,011$) e ser questionado, durante o atendimento, sobre a prática de atividade física ($p=0,012$) e a prática de atividade física regular com participação em atividades de educação em saúde ($p=0,031$), estar satisfeito com a assistência ($p=0,04$), ser atendido

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no mesmo dia em que procurou a UBS ($p=0,017$) e os profissionais perguntarem sobre sua saúde ($p=0,011$). **Conclusão:** as pessoas com DM2 apresentaram boa adesão ao tratamento medicamentoso e baixa adesão ao não medicamentoso, indicando que as equipes da ESF precisam ampliar a implementação de ações de promoção da saúde, prevenção e controle da doença e suas complicações.

Palavras-chave: Diabetes Mellitus; Atenção Primária à Saúde; Cooperação e Adesão ao Tratamento.

RESUMEN

Objetivo: verificar la asociación entre la adhesión al tratamiento con medicación y sin medicación y las prácticas de atención de los equipos de la Estrategia de salud familiar (ESF) a las personas con diabetes Mellitus tipo 2 (DM2). **Método:** estudio transversal, tipo encuesta domiciliaria, realizado con personas con DM2 inscritas en los 65 equipos urbanos de la ESF, seleccionados al azar y estratificados por equipo. Los datos se recogieron el primer semestre de 2014 a través de una entrevista estructurada y durante el análisis, utilizando regresión logística, considerando la asociación significativa cuando $p \leq 0.05$. **Resultados:** las 408 personas que participaron tenían edad promedio de 66,5 años; el 84,1% indicó adhesión al tratamiento farmacológico; el 29,4% realizó actividad física regular y el 24% tenía nutrición adecuada. Después de los ajustes, las variables que permanecieron asociadas con el tratamiento farmacológico fueron: la no participación en actividades de educación para la salud ($p = 0,012$) y atención del mismo enfermero ($p = 0,048$). Con respecto a la medicación, la adopción de la alimentación adecuada se asoció con el control trimestral de la glucemia capilar ($p = 0,011$) y que le preguntasen, mientras lo atendían, sobre la práctica de actividad física ($p = 0,012$) y la práctica de actividad física regular con participación en actividades de educación para la salud ($p = 0,031$), estar satisfecho con la atención brindada ($p = 0,04$), ser atendido el mismo día que fue a la UBS ($p = 0,017$) y que los profesionales preguntasen sobre su salud ($p = 0,011$). **Conclusión:** las personas con DM2 mostraron buena adhesión al tratamiento con medicación y baja adhesión al tratamiento sin medicación, lo que indica que los equipos de ESF deben ampliar la implementación de acciones para promover la salud, prevenir y controlar la enfermedad y sus complicaciones.

Palabras clave: Diabetes Mellitus; Atención Primaria de Salud; Cumplimiento y Adherencia al Tratamiento.

INTRODUCTION

The performance of the Family Health Strategy (*Estratégia Saúde da Família* - ESF) teams is marked by the biomedical care model, which is centered on a punctual and fragmented approach, which in general does not respond to the demands generated by chronic conditions. However, it cannot be denied that, after its implementation, there was a significant extension in outpatient care for people with the two most prevalent chronic health problems in our country - arterial hypertension (SAH) and diabetes Mellitus (DM).

Type 2 diabetes Mellitus (DM2), for example, is one of the most frequent metabolic disorders in the world and its prevalence in adults has increased in the last decades.¹ In Brazil,

in 2014, there were 11.6 million people between 20 and 79 years old with DM2, which corresponded to 8.7% of the total of 133.8 million individuals in this age group. It is estimated that DM2 was responsible for the death of 116,383 people in the same year and that 41.7% of these deaths occurred in individuals under the age of 60.²

The assistance to people with DM2 in primary health care (PHC) aims to control metabolic alterations, prevent complications and promote quality of life. The premise is that better results are achieved when there is an association of pharmacological (hypoglycemic) and non-pharmacological (physical activity and nutritional diet) measures implemented from assistance and educational actions that involve everything from registration, follow-up and monitoring, to guaranteeing provision of medications and adequate treatment to prevent complications.³

The control of DM2 and the prevention of its complications are directly related to the self-care actions developed by the affected individual and the quality of the care provided, and in most cases, it is possible to have adequate management in PHC.⁴

Despite the proven positive impact that the actions developed within PHC have on the reduction of disease morbidity and mortality,⁴ studies have shown that, although people with diabetes usually present good adherence to pharmacological treatment,^{5,6} the same does not occur in relation to non-pharmacological treatment,^{5,6} which favors the appearance of complications.⁷ This scenario allows us to deduce that the advances in the extension of coverage promoted by the ESF have not been effective enough to promote the organization of care practices, in order to cause positive impacts on the conditions of life of those who live with chronic health conditions.⁸

The quality of care for people with DM2 can be assessed through the relationship between the services offered and the disease control parameters included here as adherence to pharmacological and non-pharmacological treatment. Thus, it is assumed that the implementation, development and organization of care practices, when well-managed, can meet the needs of users and, at the same time, promote or strengthen conditions favorable to adherence to treatment.⁹

The lack of adherence to treatment compromises the control of diabetes, in addition to favoring the appearance of complications.^{6,8} In connection with this, a study carried out in Jordan with individuals with DM2 found a positive correlation between adherence to drug treatment and satisfaction with quality of care in the health services used and trust in the professional team.¹⁰ Thus, considering the principles on which the ESF teams should act, such as, for example,

the embracement and the bond, the essential role of these professionals is reiterated maintenance and control of DM2.

Furthermore, investigating the relationship between adherence to the treatment of DM2 and the health actions carried out by the ESF can assist in the implementation of care practices capable of promoting better control of the disease. Thus, the evaluation of health care offered by the ESF, through the parameters expected in the control of diabetes, can support health planning, in order to strengthen the care and monitoring of this public, in addition to identifying gaps in the development and effectiveness of developed actions.

Based on the above, this study aimed to verify the association between adherence to pharmacological and non-pharmacological treatment and the care practices provided to people with DM2 by the Family Health Strategy teams.

METHOD

Population-based household survey, with a cross-sectional design, based on a probabilistic sample of people with diabetes *Mellitus* assisted in primary care, conducted in *Maringá, Paraná*, Brazil. At the time of the study, the municipality had 29 basic health units (BHU), 66 ESF teams and 7,562 people with diabetes, over the age of 15, enrolled in the Registration and Monitoring System for Hypertensive and/or Diabetics (*Sistema de Cadastramento e Acompanhamento de Hipertensos e Diabéticos*, SIS-HIPERDIA). The inclusion criteria adopted in the sample composition were people with DM2, aged 18 years old or more, enrolled with teams in the urban area of the municipality and who underwent treatment for DM2 control in their respective team for a maximum of six months. Data were collected in households, from Monday to Saturday, in the first half of 2014.

In defining the sample size, the number of individuals with diabetes was considered in the SIS-HIPERDIA. An estimated error of 5%, reliability and precision of the sample of 95% and prevalence for the event of interest of 50% were considered, to obtain more variability of the studied event, plus 15% (54 individuals) for possible losses or exclusions. The sample effectively studied was 408 people with DM2.

To select the individuals to be included in the study, stratified random sampling by the ESF team was used. Participants were approached in their homes, according to subsamples proportional to the number of people with DM2 registered in each ESF team. In cases that individuals could not be found at home, up to two returns were admitted on different days and times, and afterwards, the next one on the list was replaced, with a maximum of two replacements.

The response variable "DM2 control" was verified using other parameters: a) **adherence to pharmacological**

treatment - daily use of prescribed oral antidiabetic (yes or no); b) **adherence to non-pharmacological treatment** - regular practice of physical activity and follow-up of recommendations on nutrition.

It is noteworthy that regular physical activity was considered present when practicing light to moderate activity (e.g. walking, cycling, gymnastics, swimming, among others) at least three times a week and for at least 30 minutes each time.¹¹ The follow-up of the recommendations on nutrition was considered appropriate when the individual reported not eating or almost never eating sweets, sugars, various carbohydrates and foods rich in fats; always or almost always eat five or more servings of fruits and vegetables; make exclusive or almost always use of a sweetener; and having five or more meals a day. The inappropriate standard was considered when the individual referred three or less of these items.¹¹

The independent variables tested were: time of diagnosis (grouped into <5, 5 to 10, 11 to 20 and >20 years), periodicity of capillary glycemia check (daily, monthly, quarterly and without periodicity); *indicators of the assistance provided by the ESF team during care* – checking of weight, blood pressure, capillary blood glucose, waist circumference measurement, cardiac auscultation, foot examination, oral antidiabetic distribution, request for blood and urine exams, and specialized consultations, offer guidelines and activities on health education related to diabetes, guidance on complications related to the disease, on the importance of physical activity, adequate nutrition and correct use of oral antidiabetic agents; conducting clinical anamnesis (health status, eating habits and physical activity); *organizational access indicators* - time of registration in the ESF team (<5, 5 to 10, 11 to 20 and >20 years), assistance by the same doctor and nurse, scheduling of exams and specialized consultations by BHU, facility to show exam results to the doctor, availability of care and scheduling of medical appointments on the same day one goes to BHU, need to wait to be assisted when arriving at BHU and wait for specialized consultations; satisfaction indicators with the assistance received, classified as satisfied and dissatisfied.

For data collection, a structured instrument developed by the researchers was used, based on the objectives of the study and the contribution of other instruments already validated, addressing four dimensions: a) sociodemographic and clinical characterization; b) adherence to treatment and control of the disease; c) assistance received; d) service evaluation. A preliminary study was carried out with 20 patients not included in the research, to adapt the language and identify issues with dubious interpretation.

Responses were recorded on a five-point Likert scale (zero for "I don't know" or "does not apply" and values from one to five indicating the degree of agreement with statements

5-always, 4-almost always, 3-sometimes, 2-almost never and 1-never). For purposes of analysis, responses with values three, four and five were grouped as yes (zero) and the others as no (one).

The data obtained were encoded and entered twice to correct possible typing errors in Microsoft Office Excel® 2010 software and later transferred to the SPSS® program, version 2.0. The descriptive and inferential analysis was divided into two moments: crude (univariate) analysis, using Pearson's non-parametric chi-square test, in which all independent variables were tested; and adjusted (multiple) analysis, using unconditional multiple logistic regression models.

In this second moment, considering the relationship of the object of study with multiple predictive factors evidenced in the literature, all the variables studied were considered in the adjustment of the model. In addition, the Forward method was used, in which variables with $p < 0.20$ in the crude analysis were inserted into the logistic model, according to the increasing order of the p-value, allowing to gradually verify changes in significance and permanence or exclusion of variables from the model. It was used as a measure of association with Odds Ratio (OR), with a 95% confidence interval, significance level established when $p < 0.05$ for the tests performed and level of adjustment of the model through the Hosmer and Lemeshow test.

In the development of the study, the national ethical recommendations on research with human beings recommended by the *Conselho Nacional de Saúde* (BR) were complied with and its project was approved by the Ethics Committee of the signatory institution (Opinion Report Nr. 448,162/2013; CAAE: 22498813.0.0000.0104).

RESULTS

The average age of the 408 people with DM2 was 66.5 years \pm 9.8 (minimum of 31 and maximum of 96 years). Most were female (69.4%), white (77.2%), with a partner (69.6%) and with low education (59.1%). The average income was R \$ 1,688.63 monthly \pm 1,142.00. The average time of diagnosis was 11 \pm 8.3 years (minimum of one and maximum of 40 years) and registration in the same ESF team was 10.1 years \pm 7.8 (minimum of one and maximum of 25 years). Assistance was assessed as satisfactory by 81.9% of individuals with DM2.

Most of the interviewees (91.4%) used oral antidiabetic drugs, and of these, 84.1% were considered adherent to drug treatment. The practice of isolated regular physical activity was reported by 29.4% of the individuals and adequate nutrition by 24.0%.

Microvascular complications were mentioned by 114 individuals (27.9%), with a higher prevalence of

ophthalmological alterations (58.2%). Other complications mentioned were changes in limb sensitivity (49.3%), difficulty in healing (26.7%), renal changes (11.8%) and amputations (5.4%). Hospitalization due to diabetes was cited by 112 (27.5%) users, and 41 (36.5%) individuals reported having been hospitalized more than once for this cause.

In the univariate analysis, a significant association was observed between adherence to drug treatment and non-participation in health education activities ($p=0.014$), scheduling of specialized consultations at the BHU ($p=0.065$), facility to show exam results to the doctor ($p=0.077$), be seen by the same nurse ($p=0.083$) and have the exams scheduled at the BHU ($p=0.098$).

Table 1 - Univariate analysis of factors associated with adherence to pharmacological treatment - oral antidiabetic - in people with DM2 treated in the ESF, *Maringá*, PR, 2014

Independent variables	Medication Treatment Adherence		
	n	%	P
Medicinal - Oral antidiabetic***			
Participates in health education activity			
Yes	91	86.7	0.014
No	222	94.5	
BHU schedules specialized consultations			
Yes	118	89.4	0.065
No	27	98.5	
Facility to show exam results to the doctor			
Yes	246	90.4	0.077
No	97	96.0	
Assisted by the same nurse			
Yes	246	93.5	0.083
No	97	88.2	
Exams are scheduled at BHU			
Yes	299	91.2	0.098
No	44	96.8	
Abdominal circumference is measured			
Yes	167	94.4	0.106
No	176	89.8	
Health education activities are offered			
Yes	150	89.3	0.121
No	169	93.9	

*** Adjusted for the variables: not having the facility to show exam results to the doctor and performing a waist circumference check during HIPERDIA meetings. Quality adjustment (Hosmer and Lemeshow test): $p=0.906$.

It is observed in Table 2 that the variables related to the list of services offered and the structural aspects of the BHU that positively interfere in adherence to non-pharmacological

treatment related to adequate nutrition were: daily capillary glycemia check, questioning about the practice of physical activity, check waist circumference, offer health education activities. The variables related to the list of services offered and the structural aspects of the BHU showed significance <20% (Table 2).

On the other hand, adherence to regular physical activity was associated with participation in health education activities ($p=0.005$), satisfaction with assistance ($p=0.013$), care on the same day that the BHU was sought ($p=0.045$), foot examinations ($p=0.052$) and the fact that professionals ask about their health (0.057) (Table 3).

Table 4 shows the variables that were significant in the multiple analysis test, and the main factors that remained associated with adherence to pharmacological treatment were: not participating in health education activities and being seen by the same nurse. In relation to non-pharmacological treatment, adherence to physical activity was associated with a greater number of variables than adherence to adequate nutrition. In fact, it was observed that the glycemia check had an inverse association with adherence to adequate nutrition (Table 4).

DISCUSSION

Despite the possibility of differences in the results of studies investigating rates of adherence to the treatment of chronic diseases, due to the lack of homogeneity in the methods used, the values found in this study, in relation to pharmacological treatment (84.1%), are very similar to other studies,^{6,12,13} who also identified high rates of adherence to this type of treatment.

There is a consensus in the literature that for the metabolic control and prevention of complications of DM2, a self-care routine that involves pharmacological and non-pharmacological treatment is necessary.^{5,13} In the present study, however, low adherence to healthy lifestyle habits was observed, such as a balanced/adequate diet and regular physical activity.

DM2 imposes important barriers on affected individuals and sometimes the necessary actions for effective care do not correspond with what they would like to do, so that the necessary care actions are perceived as an obligation. This perception mainly involves aspects related to diet, physical activity and emotional aspects.¹⁴

A study carried out with ESF teams in *Minas Gerais*, when investigating factors related to adherence to the DM2 pharmacological treatment, also found more weakness related to the nutrition plan and the practice of physical activity.¹² Lower frequencies of adherence to non-pharmacological

treatment can be attributed to the perceptions and beliefs of people with DM2 about treatment, more specifically to the great valorization of the medication as a modality with greater impact on disease control, when compared to diet and the practice of frequent physical activity.¹³ This can be confirmed by the significant association between not participating in health education activities with the use of oral antidiabetic agents, as evidenced in the present study.

With regard to the importance of adherence to non-pharmacological treatment, a review research revealed that the practice of aerobic exercises has an important impact on heart rate and glycemetic control,¹⁵ while adherence to adequate nutrition allows blood glucose levels not to suffer abrupt changes, reducing the need for medication for its control. In this context, a study carried out in Jordan with 223 people with DM2 obtained better glycemetic control and absence of complications resulting from DM2 in individuals who practiced efficient self-management of the disease, represented by dietary control, frequent physical exercise, regular use of oral antidiabetics and more frequency of checking blood glucose.¹⁶

The identification of a significant association between the tested outcomes and the various indicators of organizational access allows us to deduce that the effectiveness of the assistance provided to people with DM2 is related to other actions besides those offered by the ESF team during the actual service. It involves, for example, attending or scheduling a medical appointment on the same day when going to the BHU and the waiting time at that location. This result reinforces the importance of access in PHC, which is a fundamental element for the effectiveness of health actions.¹⁷

An integrative review¹⁸ that investigated factors that interfere with access to PHC found that those favorable to this attribute were mainly related to the structural and organizational aspects of the service. Those who are deprived are associated with gaps in the organization and management of health services. In turn, such an organization is related to the balance between meeting spontaneous and scheduled demand, because when there is a disproportion between demand and service provision, added to the flow of users from different sources, it usually results in overload and hinders accessibility.¹⁸

Nevertheless, access provides user satisfaction with care and the establishment of a bond, which may result in better adherence to the proposed treatment and, consequently, better disease control.^{17,19} In the present study, user satisfaction with the service maintained an association with adherence to the practice of physical activities, which reinforces the relevance of this component for the control of determining factors for the disease. It is noteworthy that a study²⁰ carried out in *Ribeirão Preto* with the objective of understanding the satisfaction of

Table 2 - Univariate analysis of factors associated with non-pharmacological treatment - adherence to adequate nutrition in people with DM2 treated in the ESF, *Maringá*, PR, 2014

Independent variables	Adherence to adequate nutrition		
	n	%	P
Blood glucose is checked			
Daily	28	33.3	0.008
Quarterly	17	13.8	
Monthly	9	23.7	
No periodicity	44	27	
Asked if you practice physical activity			
Yes	73	28.2	0.009
No	25	16.8	
Abdominal circumference is measured			
Yes	56	29.0	0.025
No	42	19.5	
Health education activities are offered			
Yes	51	28.5	0.032
No	38	19.1	
BHU schedules specialized consultations			
Yes	29	20.9	0.065
No	11	36.7	
Receives guidance on the disease			
Yes	50	28.2	0.080
No	48	20.8	
Waits long for specialized consultations			
Yes	19	30.2	0.084
No	17	18.3	
Receives guidance on complications			
Yes	48	28.2	0.092
No	50	21.0	
Ask about your health			
Yes	67	26.8	0.098
No	31	19.6	
Facility to show exam results to the doctor			
Yes	78	26.1	0.105
No	20	18.3	
Diagnostic time (in years)			
1 to 4	18	20	0.138
5 to 10	33	20.6	
10 to 20	37	31.6	
>20	10	24.4	
Weight is checked			
Yes	85	24.4	0.170
No	13	17.8	

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Table 2 - Univariate analysis of factors associated with non-pharmacological treatment - adherence to adequate nutrition in people with DM2 treated in the ESF, *Maringá*, PR, 2014

Independent variables	Adherence to adequate nutrition		
	n	%	P
Waits too long to be attended at BHU			
Yes	42	39.8	0.197
No	56	27.9	

Table 3 - Univariate analysis of factors associated with adherence to non-pharmacological - practice of physical activity in people with DM2 treated in the ESF, *Maringá*, PR, 2014

Independent variables	Adherence to physical activity		
	n	%	P
Participates in health education activities			
Yes	45	40.5	0.005
No	68	26.1	
Pleased with the assistance			
Yes	107	32	0.013
No	13	17.6	
It is assisted on the same day when going to BHU			
Always	64	35.8	0.045
Sometimes	30	25	
Never	26	23.9	
Foot examination is performed			
Yes	18	20.9	0.052
No	102	31.7	
Ask about your health			
Yes	65	26	0.057
No	55	34.8	
Waits too long to be assisted at BHU			
Always	10	19.2	0.110
Sometimes	53	34.2	
Never	57	28.4	
Cardiac auscultation is performed			
Yes	38	24.8	0.116
No	82	32.2	
Asked if you practice physical activity			
Yes	83	32.0	0.124
No	37	24.8	
Assisted by the same nurse			
Yes	91	31.6	0.133
No	29	24.2	
Receives guidance on physical activity			
Yes	76	32.2	0.147
No	44	25.6	

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Table 3 - Univariate analysis of factors associated with adherence to non-pharmacological - practice of physical activity in people with DM2 treated in the ESF, *Maringá*, PR, 2014

Independent variables	Adherence to physical activity		
	n	%	p
Health education activities are offered			
Yes	60	33.5	0.177
No	54	27.1	

Table 4 - Analysis and multiple logistic regression model of factors associated with adherence to pharmacological and non-pharmacological treatment in people with DM2, assisted in the ESF, *Maringá*, PR, 2014

Independent variables* Treatment Adherence	Multiple Analysis	
	OR (IC95%)	p**
Medicinal - Oral antidiabetic***		
Does not participate in health education activity	2.83 (1.26; 6.38)	0.012
Assisted by the same nurse	2.28 (1.00; 5.20)	0.048
Non-medicated - Adequate nutrition***		
Check blood glucose quarterly	0.45 (0.79; 2.49)	0.011
Asked if you practice physical activity	1.93 (1.93; 3.24)	0.012
Non-medicated - Physical activity****		
Participates in health education activities	0.57 (0.34; 0.95)	0.031
Satisfied with the assistance	2.99 (1.40; 6.35)	0.004
It is assisted on the same day when going to BHU	0.49 (0.27; 0.88)	0.017
Ask about your health	1.94 (1.17; 3.21)	0.011
Waits too long to be attended at BHU	2.51 (1.06; 5.92)	0.048
Assisted by the same nurse	1.72 (1.00; 2.96)	0.048

* Variables with <20% significance in the bivariate analysis. ** Wald test.

*** Adjusted for the variables: not having the facility to show exam results to the doctor and performing a waist circumference check during HIPERDIA meetings. Quality adjustment (Hosmer and Lemeshow test): p=0.906.

**** Quality of fit: p=0.931

***** Adjusted for the variable: receives guidance on the need to practice physical activities frequently. Quality of fit: p=0.446.

users in relation to access and embracement in PHC found that the delay in scheduling and attending consultations in PHC and the non-fulfillment of spontaneous demand are the main factors for low user satisfaction. In turn, the attention and dialogue they had with the PHC professionals were essential to their satisfaction with the service.¹⁹ The relationship between satisfaction and the approach of the professionals draws attention, considering that the establishment of a link between them and users also stand out in the present study.

The association found between the care provided by the same nurse is also related to the bond and embracement. These two attributes contribute to the development of prevention and health promotion actions, favor the recognition of users' needs and, therefore, promote more satisfaction with the service.²⁰ It is highlighted that the nurse in the ESF team is the professional who more has contact and knowledge of the health conditions of the population served, it is not uncommon

that over time it establishes a relationship of trust with the user, leaving them more comfortable to expose their problems and, often, follow the proposed recommendations.²¹

Furthermore, a review study on interventions for the acquisition of therapeutic self-care found that nurses were the professionals most cited as facilitators of self-management of the disease, and that the follow-up conducted by this professional favors the improvement in the control of blood glucose levels.²² Therefore, these professionals can strengthen the motivation for self-care of people with DM through an empathic approach, practical support and continued group support.²² The result of the present study, therefore, reinforces the relevance of the role of nurses in primary health care, as the orientation for the development of skills and behavior change strategies contributes significantly to the treatment of DM2 and the quality of life of these patients.²³

It is reinforced that, despite the relevance of access and the link for the effectiveness of the actions carried out in PHC, it is necessary to have an adequate and efficient list of services to offer subsidies for care. In this sense, in the present study, the relevance of health education practices, blood glucose checking and investigation of health conditions and the practice of physical activities among users with DM2 was verified for adherence to treatment.

In order to highlight the importance of health education in the care of DM2, a randomized clinical trial conducted with 238 people with DM2 in a municipality in Minas Gerais found that people who participated in a group educational program promoted in the ESF had effective results in improving of self-care and metabolic control of DM2.²⁴ It is noteworthy that the provision of information and guidance, as well as checking blood glucose and questioning healthy habits and health conditions, can also influence the behavior of individuals when deciding whether to proceed with the prescribed therapy. In other words, being safe and provided with the necessary information to promote self-care and the quality of monitoring the conditions that determine the disease has an influence on adherence to treatment.⁵

Being satisfied with the assistance offered, as described in the present study, can be understood as an aspect that goes beyond the technical dimension, that is, it encompasses the subject's perceptions, conceptions and performance on his health-disease process and the way the health system is organized to meet your needs. In addition, the team plays a relevant role to minimize the effects of unsatisfactory service.¹⁷

Therefore, it is necessary that professionals are prepared to provide comprehensive care to the individual and not just to their complaint,²⁵ and this implies changes in professional training and daily practice. In view of the results evidenced in the present study, the importance of having a service focused on PHC attributes, such as access, bonding and comprehensiveness, is reinforced in order to enhance adherence to treatment and, consequently, prevention of diseases related to the disease.

CONCLUSION

Nevertheless, there was a low adherence to non-pharmacological treatment, which in turn demonstrated an association between adherence to healthy eating and checking capillary blood glucose and physical activity; while adherence to the practice of physical activity was associated with the waiting time for care, satisfaction with the care received, receiving guidance on the state of health, being attended by the same nurse, participating in health education activities and being attended at same day you are looking for the service.

Thus, adherence to treatment, whether medicated or not, has a direct relationship with the parameters of disease control and the care provided, more specifically in relation to the indicators of organizational access, bond and the care provided. These results reinforce that the ESF teams play a fundamental role in caring for people with DM2, through the implementation of health promotion actions, prevention and control of the disease and its complications, at the individual and collective levels, and also reinforces the potential of the attributes access and link between users and professionals as agents that enhance the effectiveness of care and, consequently, better adherence to treatment.

Findings like the one in this study, in addition to reinforcing how important the structural and administrative organization and service offer is; show that only the supply of drugs or guidance and prescription of behaviors is not enough for adherence to treatment in DM2. However, the association of all these attributes within PHC will certainly favor more adherence to the proposed treatments, in addition to preventing and postponing complications arising from the disease.

Possible limitations of the study are related to the way of obtaining the data, as the self-reports can be influenced by errors resulting from memory failure. Furthermore, assessments of adherence by indirect methods (self-report) are dependent on the person's willingness to reveal, in fact, their behavior in relation to following the therapeutic recommendations. Anyway, the results found in the present study indicate the need to identify the factors that have made it more difficult to adhere to these practices, in order to subsidize the planning of actions that can help to circumvent them.

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