EFFECT OF THE CONSULTATION OF NURSING ON KNOWLEDGE, QUALITY OF LIFE, ATTITUDE TOWARDS DISEASE AND SELF-CARE AMONG PERSONS WITH DIABETES

EFEITO DA CONSULTA DE ENFERMAGEM NO CONHECIMENTO, QUALIDADE DE VIDA, ATITUDE FRENTE À DOENÇA E AUTOCUIDADO EM PESSOAS COM DIABETES

EFECTO DE LA CONSULTA DE ENFERMERÍA EN EL CONOCIMIENTO, CALIDAD DE VIDA, ACTITUD ANTE LA ENFERMEDAD Y AUTOCUIDADO EN PERSONAS CON DIABETES

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ABSTRACT

To verify the effect of nursing consultation based on self-care supported on knowledge and attitude towards disease, quality of life and adherence to self-care activities in people with type 2 diabetes mellitus (DM). This is a randomized and controlled clinical trial developed in a city in southern Brazil from March 2014 to January 2015. A total of 134 individuals participated in the study and were randomly assigned to two groups: intervention group (IG) and control group (CG). For the data collection, four questionnaires were applied in both groups and in two moments (initial and final). The IG received care consisting of three bi-monthly nursing consultations interspersed by two telephone calls to monitor the agreed goals and the routine care, consisting of medical consultation by spontaneous demand and free supply of prescribed medication. The CG only received the routine care. The IG presented a significant change in knowledge about diabetes (p <0.001), impact of the disease on quality of life (p = 0.002), attitude towards disease (p = 0.024) and adherence to self-care activities (p <0.001). The nursing consultation focused on supported self-care has positive effects on knowledge and attitude towards the disease and on adherence to self-care activities, but increases the impact of the disease on quality of life. Brazilian Registry of Clinical Trials: RBR – 3xgjf3.
Keywords: Office Nursing; Diabetes Mellitus, Type 2; Self Care; Clinical Trial.

RESUMO

*Verificar o efeito da consulta de enfermagem fundamentada no autocuidado apoiado sobre o conhecimento e a atitude frente à doença, na qualidade de vida e adesão às atividades de autocuidado em pessoas com diabetes mellitus (DM) tipo 2. Ensaio clínico randomizado e controlado desenvolvido em município no Sul do Brasil no período de março de 2014 a janeiro de 2015. Participaram do estudo 134 indivíduos alocados aleatoriamente em dois grupos: intervenção (GI) e controle (GC). Para a coleta de dados foram aplicados quatro questionários nos dois grupos e em dois momentos (inicial e final). O GI recebeu atendimento constituído por três consultas de enfermagem bimensais intercaladas por duas ligações telefônicas para monitoramento das metas pactuadas e a assistência de rotina constituída por consulta médica por demanda espontânea e fornecimento gratuito de medicação prescrita. O GC só recebeu os cuidados de rotina. Os integrantes do GI apresentaram mudança significativa em relação ao conhecimento sobre o diabetes (p<0,001), impacto da doença na qualidade de vida (p=0,002), na atitude frente à doença (p=0,024) e na adesão às atividades de autocuidado (p<0,001). A consulta de enfermagem centrada no autocuidado apoiado tem efeitos positivos sobre conhecimento e a atitude frente à doença e sobre a adesão às atividades de autocuidado, porém aumenta o impacto da doença na qualidade de vida. Registro Brasileiro de Ensaios Clínicos: RBR – 3xgjf3.
Palavras-chave: Enfermagem no Consultório; Diabetes Mellitus Tipo 2; Autocuidado; Ensaio Clínico.*

RESUMEN

Verificar el efecto de la consulta de enfermería basada en el autocuidado apoyado en el conocimiento y la actitud ante la enfermedad, en la calidad de vida y adhesión a las actividades de autocuidado en personas con diabetes mellitus (DM) tipo 2. Ensayo clínico randomizado y controlado llevado a cabo en el sur de Brasil entre marzo de 2014 y enero de 2015. Participaron del estudio 134 individuos asignados al azar en dos grupos: intervención (GI) y control (GC). Para la recogida de datos se aplicaron cuatro cuestionarios en los dos grupos en dos momentos distintos (inicial y final). El GI recibió atención constituida por tres consultas de enfermería bimensuales intercaladas por dos llamadas telefónicas para monitoreo de las metas estipuladas y la atención de rutina constituida por consulta médica por demanda espontánea y suministro gratuito de la medicación prescrita. El GC sólo recibió la atención de rutina. Los integrantes del GI presentaron un cambio significativo en relación al conocimiento sobre la diabetes (p <0,001), el impacto de la enfermedad en la calidad de vida (p = 0,002), en la actitud ante la enfermedad (p = 0,024) y en la adhesión a las actividades de autocuidado (P <0,001). La consulta de enfermería centrada en el autocuidado apoyado tiene efectos positivos sobre el conocimiento y la actitud ante la enfermedad y en la adhesión a las actividades de autocuidado; aumenta, sin embargo, el impacto de la enfermedad en la calidad de vida. Registro Brasileño de Ensayos Clínicos: RBR – 3xgjf3.
Palabras clave: Enfermería de Consulta; Diabetes Mellitus Tipo 2; Autocuidado; Ensayo Clínico.

INTRODUCTION

Changes in lifestyle, resulting from the process of industrialization and the social context, influence the increase in the prevalence of chronic non-communicable diseases[1], with emphasis on type 2 diabetes *mellitus*. In Brazil, a household survey conducted in 2013 found a prevalence of 6.2% of the disease.[2] According to data from the International Diabetes Federation in 2012, Brazil is the fourth country in the world with the highest prevalence of this disease. Between 1996 and 2009 there was a 98% increase in the occurrence of deaths, which reinforces the importance of addressing this chronic condition as a priority challenge for the organization of the health care process.[3]

However, the health care strategies adopted by the health sector do not seem to be sufficiently effective, since the appearance of incapacities, amputations and the early impairment of other organs arising from the disease are frequent. New actions and interventions, of simple execution and low cost, should be developed by the professionals who work in the Brazilian public health system with the aim to stimulate individuals to the adequate management of the disease, since the metabolic control depends to a large extent on the adherence of the patient and their commitment to make changes in lifestyle.[4]

The new strategies should encompass elements that favor the monitoring and control of the disease and the implementation of changes in lifestyle. It should be emphasized that knowledge about and attitude towards type 2 diabetes *mellitus*, as well as the adoption of self-care actions, can reduce its impact on people's quality of life.[5]

The model of attention to chronic conditions proposes the development of actions that improve the control of the disease, and supported self-care is one of the tools that guide the care/assistance from identified problems and goals established jointly between the health professionals and the patients themselves.[6] In this sense, interventions aimed at promoting self-care by the individual with type 2 diabetes *mellitus* are crucial to achieve positive results in the control and management of the disease.[7] These interventions promote greater access to information related to the disease (physiopathology, management, modification of life habits, among others), which allows to know more about the chronic condition, the development of abilities to face and control it and the reduction of the impact of disease on quality of life.

Therefore, the research question is: Is the intervention based on the presuppositions of supported self-care capable of producing important changes in the way individuals with type 2 diabetes mellitus cope with the disease?

To this date, there are no published studies on the use of supported self-care in the follow-up of individuals with diabetes *mellitus*. Thus, the present study can contribute in this sense since it includes a light and low cost technology, which is also easy to be conducted by the health team. Therefore, this study aims to verify the effect of nursing consultation based on self-care supported on knowledge and attitude towards the disease, adherence to self-care actions and quality of life.

METHOD

This is a randomized controlled trial of open type, that is, all participants were aware of the intervention protocol. It was developed from March 2014 to January 2015 in a basic health unit with a great flow of care to people with type 2 diabetes *mellitus* in a small city located in the southern region of Brazil.

The study population was composed of 197 individuals, all enrolled in the same basic health unit. The inclusion criteria adopted were: having a diagnosis of type 2 diabetes *mellitus* and age equal to or greater than 40 years. The exclusion criteria were: presenting problems that would hinder verbal communication and the displacement to the basic health unit for the nursing consultation. According to the information provided by the basic unit team and the criteria described, 27 individuals were excluded.

The sample size was calculated considering a standard deviation for HbA1c of 1.9%.[8] The minimum detectable difference was 1%, the significance level (α) was 0.05 and the statistical power of the test was 0.80 plus 10% for possible losses, which resulted in a sample of 134 individuals who were randomly selected and then randomized in the intervention (IG) and control (CG) groups through software R.

Eligible individuals: 197

Inclusion

Excluded (n=27; 13 because of problems that hindered verbal communication and 14 due to difficulties to commute to the Basic Health Unit)

Met the inclusion criteria (n=170)

Randomized (n=134)

Intervention group (n=67)

Control/comparison group (n=67)

Follow-up

Loss of follow-up (n=0)

Loss of follow-up (n=5)
Reason: 3 deaths; 1 change of city; 1 refusal to do the final evaluation.
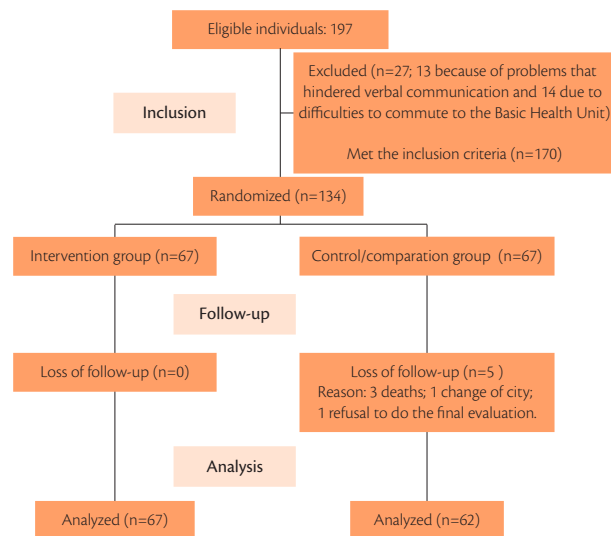
Analysis

Analyzed (n=67)

Analyzed (n=62)

Figure 1 - Randomization and follow-up of individuals participating in the RCT, according to CONSORT.

The members of the two groups underwent clinical, anthropometric and laboratory evaluation and answered questionnaires before and after the intervention, which was performed only for individuals included in the IG. The intervention consisted of three bi-monthly nursing consultations interspersed by two telephone calls. It is noteworthy that during the study the subjects of both groups received the usual follow-up offered by the basic health unit, which consists of medical consultations by spontaneous demand and distribution of medications according to medical prescription.

The Ministério da Saúde (BR) recommends regular laboratory tests, nursing and medical consultation, as well as free distribution of medications such as metformin, danil and insulin in the follow-up of individuals with diabetes *mellitus*. However, in the city under study, individuals with diabetes *mellitus* assisted in the basic health units could perform consultations and control tests only when they spontaneously seek the service. Figure 2 shows the flowchart representing the data collection.

Nursing consultations were guided by supported self-care, whose main objective was to help people to become agents responsible for their own care. According to this referential, individuals with chronic disease are able to know, as much as health professionals, their illness and their needs, but for this purpose they need to be properly instructed and motivated.[6]

Data collection at the household – IG and CG
• Invitation to participate in the research;
a) Application of the questionnaires (sociodemographic and clinical characterization, DKN-A; ATT-19; QAD and PAID).
b) Scheduling of lab tests (for the following week).

1st Moment

March to May 2014

Intervention

1st Nursing Consultation
July 2014

IG

3rd Nursing Consultation
October 2014

1st Telephone contact

2nd Nursing Consultation
August 2014

2nd Telephone contact

2st Moment

Data collection at the household – IG and CG
a) Application of the questionnaires (sociodemographic and clinical characterization, DKN-A; ATT-19; QAD and PAID).
b) Scheduling of lab tests (for the following week).
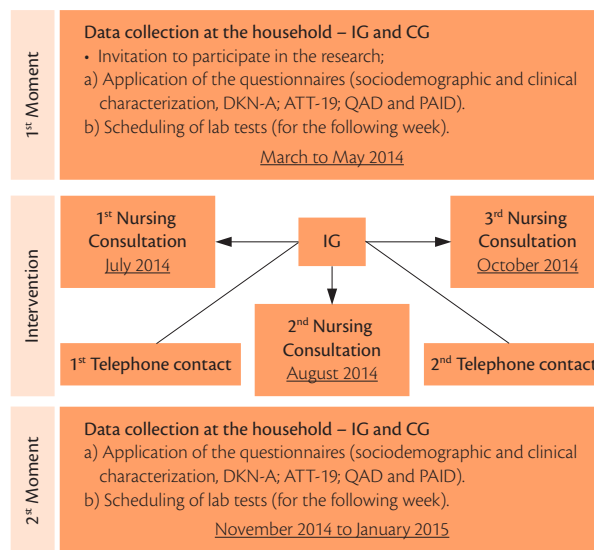
November 2014 to January 2015

Figure 2 - Flowchart of the data collection.

Telephone monitoring was performed by the same nurse responsible for nursing consultations and was aimed to follow the agreed goals during the consultations, the expectations of the individuals for the next consultation, to answer questions and to assist them in the difficulties related to the goal.

It the first nursing visit, objective and subjective data and the main difficulties about the disease were collected in order to keep it under control. It was then proposed that the individual choose a problem/difficulty and actions were suggested to solving it. From this, a goal was agreed to be reached until the next consultation, having the established problem as a priority.

In the two subsequent consultations, when the established goal was achieved, a new goal was added to the previous one. However, when it was not fulfilled, it was renegotiated from the discussion about the factors that made reaching it difficult.

In addition, during the second consultation, the participant was given a form prepared by the researchers containing information on recommended foods and on foods that should be avoided; signs/symptoms of acute and chronic complications (hypoglycemia and hyperglycemia) and attitudes necessary to remedy them; the importance of physical activity, foot care and regular follow-up with health professionals.

Individuals taking insulin received a second leaflet with instructions on storage, transport and administration of insulin; storage and disposal of needles and disposal and application. The information contained in the two leaflets was based on the Primary Care Report[9] and were intended to support/subsidize the adoption of self-care actions on a daily basis.

When the individual did not attend the nursing consultation on the scheduled day, a new appointment was scheduled for a maximum period of fifteen days. In the case of telephone contacts, up to three attempts were made, considering the

availability informed at the beginning of this study. At the end of the fifth month, those who completed three nursing consultations and received two phone calls were considered as concluding the follow-up, which corresponded to all the participants.

After the second data collection, the members of the control group (CG) (n = 67) received individual guidelines regarding the general aspects and self-care of type 2 diabetes *mellitus*, and they also received the same leaflets distributed to the participants of the intervention group.

The dependent variables used were knowledge and attitude towards the disease, adherence to self-care actions, and impact of the disease on quality of life. These variables were measured before and after the intervention among the members of both groups.

Four questionnaires validated in Brazil were used: a) Diabetes knowledge (DKN-A);[10] b) Psychological attitudes (ATT-19);[10] c) Impact of diabetes on quality of life (PAID);[11] and d) Self-care in Diabetes (QAD).[12]

The DKN-A is a questionnaire consisting of 15 items related to general knowledge about diabetes *mellitus*. The answers are presented in multiple choice scale and the total score ranges from zero to 15 points. Score equal to or greater than eight points indicates satisfactory knowledge.[10]

The ATT-19 assesses the individual's attitude towards diabetes *mellitus*. It has 19 items with five-point Likert-type scale responses ranging from "high degree of disagreement" to "high degree of agreement." The total score ranges from 19 to 95 points, and a score greater than 70 points indicates a positive attitude towards the disease.[10]

The PAID assesses the impact of diabetes on quality of life. It is a questionnaire consisting of 20 questions, whose total score ranges from zero to 100 points. Higher scores indicate a high level of emotional distress.[11]

The QAD evaluated the adherence to the self-care actions. It consists of 17 items in parameterized according to the number of days of the week (from zero to seven). Zero is the worst possible situation and seven is the most favorable. However, in the items that evaluate the consumption of high fat and sweet foods, the values are inverted.[12]

The study was approved by the Standing Committee on Ethics in Research with Human Beings of the Universidade Estadual de Maringá (Opinion no. 449,686). All study participants signed the Informed Consent Form (ICF) in two copies. The national and international ethical recommendations for research with human beings were met, with Registro Brasileiro de Ensaios Clínicos: RBR – 3xgjf3. Figure 1 illustrates the methodological scheme of the present study according to CONSORT.

Data from 67 individuals from the IG and 62 individuals from the CG were analyzed, since three died (motor vehicle crash, cancer and stroke), one moved to another city and one refused to participate in the final evaluation of the study.

The statistical software IBM SPSS® version 20 was used for the analysis. The non-parametric proportions test was applied to verify the homogeneity of the groups, which did not find significant differences.

Based on the Kolmogorov-Smirnov tests, the distribution of the data regarding the variables knowledge and attitude towards the disease was evaluated, and the non-attendance to the normal distribution was determined, being represented by the median. The variables adherence to self-care activities and the impact of the disease on quality of life presented normal distribution, being represented by the mean.

The Mann Whitney and T-Student tests were used to compare the groups. The Wilcoxon and T-paired tests were used for intergroup comparison. For all tests, the level of significance was $p \leq 0.05$.

RESULTS

In the initial evaluation, most of the 134 participants were female (68.4%), aged between 40 and 69 years (73.6%), white (80.9%), had a partner (71.3%), less than four years of schooling (54.0%) and income of up to two minimum wages (56.6%). Also, 47.1% had received the diagnosis of the disease more than 10 years ago and 22.0% had already had complications due to diabetes *mellitus*.

The majority of individuals in both groups had unsatisfactory knowledge about the disease (71.3%) and a negative attitude towards it (91.9%), a low level of emotional suffering due to the disease and low adherence (on weekdays) to self-care activities, with no significant difference between groups.

Table 1 shows that the members of both groups at the beginning of the study presented very similar performance in relation to the four variables under study. After the intervention, the difference was significant in relation to knowledge.

Table 2 shows a statistically significant difference in relation to the four variables of study only among the participants of the IG, when comparing the means and medians of the scores of the same group in the two moments.

DISCUSSION

The proper management of a chronic disease is very important so that better health outcomes among individuals with diabetes *mellitus* are achieved. However, not all are prepared to perform the activities necessary for good disease control, and health professionals should strive to promote knowledge about the disease and ways to deal with it.[13]

Knowledge about the disease is an essential resource so that the individual can take care of himself/herself adequately, either through greater adherence to treatment or the implementation of necessary changes in living habits.[14] However, although relevant, knowledge alone does not trigger behavior change.[15-16]

Table 1 - Comparison of scores regarding knowledge , attitude, disease impact and adherence to self-care activities in individuals with type 2 diabetes mellitus at the two moments of the evaluation. City in the South region, Brazil, 2014-2015

Variable	Before Intervention			After Intervention		
	C Group	I Group	p	C Group	I Group	p
	n=67	n=67		n=62	n=67	
Knowledge about diabetes ††	6.0	6.0	0.107	6.5	9.0	<0.001
Attitude towards the disease †	54.0	52.0	0.077	52.0	58.0	0.710
Impact of the disease on quality of life ††	35.8	35.0	0.734	33.6	38.8	0.089
Self-care ††	3.4	3.3	0.640	3.6	4.0	0.065

† Mann Whitney test; †† Student's t-test.

Table 2 - Comparison of scores regarding knowledge, attitude, impact on quality of life and adherence to self-care activities at the two moments of the evaluation, according to the group. City in the South region, Brazil, 2014-2015

Variable	Intervention Group			Control Group		
	Before	After	p	Before	After	p
	n=67	n=67		n=67	n=62	
Knowledge about diabetes †	6	9	<0.001	6	6.5	0.238
Attitude towards the disease †	52	58	0.024	54	52	0.062
Impact of the disease on quality of life ††	35	38.8	0.002	35.8	33.6	0.465
Self-care ††	3.31	4	<0.001	3.4	3.6	0.2

† Wilcoxon test; †† T test for related samples.

The prevalence of unsatisfactory knowledge about the disease was higher than that found in a study carried out in Ribeirão Preto, Brazil, with individuals with type 2 diabetes *mellitus*, of whom 26.6% were retired and the majority had monthly family income of one to five wages minimum.[16] However, a research[17] conducted with individuals participating in a follow-up program offered to patients with a chronic disease by a private health care provider in a city in the north of Paraná state revealed that the majority of people with type 2 diabetes *mellitus* had satisfactory knowledge, which may be related to the socioeconomic condition of participants.

After the intervention, there was a significant increase in the level of knowledge about the disease among the participants of the IG, who have now an average knowledge classified as satisfactory. Other intervention studies[15,17] although with different approaches,[15] such as group activities, also observed positive effects of the intervention on participants' knowledge.

It is believed that the positive results observed in the present study may encourage nurses, especially those working in primary care, since the nursing consultation, in addition to being an activity exclusively performed by these professionals, is an action proposed in the Primary Care Booklet[9] as an essential tool in the follow-up of individuals with chronic conditions.

The nursing consultation is a low cost and easy-to-apply intervention. Its development, however, requires cognitive, interpersonal and psychomotor skills, critical thinking, and clinical experience. However, this activity is not performed systematically in the basic health units in Brazil. Studies have shown that the accumulation of bureaucratic actions and the high demand of patients in the health unit, besides personal difficulties, are the main reasons for not valuing the consultation as a promoter of transformation of patients' health status.[17,18] In addition, it is necessary to understand that positive results from supported self-care, such as those found in the present investigation, require time and constitute a challenge for the team, mainly because they have to learn to work with the subjectivities of patients.

The lack of habit of individuals to attend the health service when they are feeling well may be a factor that hinders the implementation of care based in the scheduled nursing consultation.[19] In this way, strategies must be implemented that strengthen the relationship and bring the individual closer to the health unit. An example of this is the recognition, by professionals, of small changes resulting from the patient's effort and dedication.

The follow-up of the health professional is an essential condition for people with chronic illness to acquire knowledge and become motivated to adopt healthy behaviors and habits. A study conducted with individuals with diabetes *mellitus* who had access to information only through printed educational materials did not find improvement in the quality of care performed.[20] In this sense, a research on the preferences of individuals with diabetes *mellitus* on intervention methods showed that leaflets (9%), posters (13%) and workshops (11%) were the least preferred approaches, whereas 44.7% reported preference for receiving guidance from the health professionals themselves.[21]

Therefore, in order to reduce the negative results that the present study found, we suggest the development of actions that promote interaction between patients and professionals, supported by bond and reception, which are essential to stimulate the individual to develop skills to cope with the disease. In addition, health professionals should provide information and encourage individuals with chronic conditions to become responsible for their own health care and able to adjust their behaviors to maintain good quality of life.

The high prevalence of negative attitude towards the disease, prior to the intervention, corroborates the results of a study conducted with individuals with type 2 diabetes *mellitus*.[16] Considering that the patient's attitude towards type 2 diabetes *mellitus* is a determinant factor for the development of interventions that promote self-care, the whole health team should invest in strategies that favor behavior change. In addition, the knowledge of the negative dimensions caused by type 2 diabetes *mellitus* enables the health team to plan actions closer to the individual's reality, in order to enable them to make healthy choices in their daily lives.[22]

The emotional suffering resulting from the disease, as identified in another study[16], was increased. This result may be related mainly to the changes in habits and also in the confrontation of social situations, such as, for example, the need to take a different food in the labor environment or in commemorative dates.

In this context, a research conducted in Goiás, Brazil, pointed out that some beliefs of individuals with type 2 diabetes *mellitus* constitute barriers to adherence to nutritional therapy and treatment. It also highlighted the possibility of a vicious circle between low adherence, no achievement of benefits and discouragement to adherence.[23] Another aspect addressed was the prohibitive tone of nutritional therapy adopted by health professionals and that is very different from the daily diet adopted in the family environment of these individuals.[23]

Type 2 diabetes mellitus directly affects the quality of life and is related to the prevalence of complications and disabilities. A research has shown a statistically significant association between diabetic retinopathy and the high impact of the disease on patients' quality of life.[24] On the other hand, in the present study the average impact of the disease on the quality of life of the members of the intervention group increased, although the level of this impact remained low, according to the cut-off point of the scale.

This result may be related to the greater approximation and recognition of the chronic condition that the intervention process promoted in the patients, leading them to reflect on the disease and its consequences, which in some cases may encourage changes. Faced with this, the health team must work to prevent complications.

Low adherence to self-care measures was an important finding because it indicates how relevant it is to correctly address changes in life habits. However, the professional must re-member that behavior change is a time-consuming process, and that the motivation of the individual, with constant encouragement, and the maintenance of the commitments must guide the whole process.[4] In the United Kingdom, several structured diabetes education programs have been developed in order to instruct the individual in relation to their own care, since it is a consensus that this is an indispensable behavior for the control of the disease and maintenance of quality of life.[25]

Among the limitations of this study there is the impossibility of interaction between the participants of the different groups, since they live in a small city. In addition, the intervention was performed by a single professional, who may have specific interpersonal skills that have favored the achievement of a positive result. Thus, it is not possible to conclude that the positive effects found in this sample are exclusively due to the use of supported self-care.

CONCLUSION

It is important to note that the participants in the intervention group showed adherence to the proposed activities, as they attended the three scheduled consultations and, in general, fulfilled the established goals. This shows that the used methodology contributes to the increase of knowledge in relation to strategies that may be effective in reaching commitment to self-care in primary care users with diabetes *mellitus*.

Positive results, such as those found in this study, need to be disclosed to health professionals so that they are encouraged to make changes in their daily work and even to recognize that, often, the available resources are enough to promote and encourage the adoption of self-care actions by individuals with diabetes. In order to do this, professionals need to be willing to do things differently, to take advantage of their skills and abilities, to believe in their potential and, above all, to use the nursing consultation to welcome, listen and engage users in the joint construction of goals that respect their limitations and be adapt to the different realities.

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