INFLUENCE OF NURSING CARE BY TELEPHONE IN THE PRACTICE OF SELF-CARE OF THE USER WITH DIABETES MELLITUS

RESUMO
Objetivo: avaliar a influência da assistência de Enfermagem por telefone na prática do autocuidado do usuário com diabetes mellitus. Método: estudo de coorte, retrospectivo, realizado em uma operadora de plano de assistência à saúde no período de abril a julho de 2011. A amostra foi composta por 274 prontuários de usuários portadores de diabetes mellitus. Na coleta dos dados utilizou-se um formulário contendo indicadores de autocuidado em autoapontamento. Estudo teve o projeto aprovado pelo Comitê de Ética em Pesquisa protocolo n.º 170/11. Resultados: os pacientes na admissão realizavam as seguintes práticas de autocuidado: alimentação adequada (82,1%), exercício físico regular (51,8%), abstinência do tabagismo (84,7%), abstinência do etilismo (65,7%). Ao avaliar essas práticas após um ano, constatou-se uma modificação melhorada do autocuidado com diferença significativa (p<0,05). Conclusão: a assistência de Enfermagem por telefone pode ser considerada uma estratégia eficaz à adesão do usuário à prática do autocuidado. Descriptores: Diabetes Mellitus; Autocuidado; Telefone; Cuidados de Enfermagem.

ABSTRACT
Objective: evaluating the influence of nursing care by phone in the practice of user’s self-care with diabetes mellitus. Method: a cohort study, retrospective, held in an operator of healthcare plan in the period from April to July 2011. The sample consisted of 274 medical records of users patients with diabetes mellitus. For data collection we used a form containing indicators of self-care on admission and after a year of monitoring. The study was approved by the Research Ethics Committee, Protocol 170/11. Results: patients on admission performed the following self-care practices: proper nutrition (82,1%), regular physical exercise (51,8%), and abstinence from smoking (84,7%), abstinence from alcohol consumption (65,7%). When evaluating these practices after one year, it was noted an improved modification of self-care with a significant difference (p<0,05). Conclusion: nursing care by phone can be considered an effective strategy to the user adoption of self-care practice. Descriptors: Diabetes Mellitus; Self-Care; Phone; Nursing Care.

RESUMEN
Objetivo: evaluar la influencia de la atención de enfermería por teléfono en la práctica de auto-cuidado del usuario con la diabetes mellitus. M étodo: estudio de cohorte, retrospectivo, realizado en un portador del plan de atención de salud en el periodo abril-julio de 2011. La muestra consistió en 274 historiales clínicos de pacientes usuarios con diabetes mellitus. Para la recolección de datos se utilizó un formulario que contiene indicadores de auto-cuidado en la admisión y después de un año de monitoreo. El estudio fue aprobado por el Comité de Ética de Investigación, Protocolo 170/11. Resultados: los pacientes en la admisión efectuaban las siguientes prácticas de autocuidado: una nutrición adecuada (82,1%), el ejercicio físico regular (51,8%), la abstención de fumar (84,7%), la abstención del consumo de alcohol (65,7%). En la evaluación de estas prácticas después de un año, hubo una modificación mejorada del auto-cuidado, con una diferencia significativa (p<0,05). Conclusión: los cuidados de Enfermería por teléfono pueden considerarse una estrategia eficaz para la membresía del usuario a las prácticas de autocuidado. Descriptores: Diabetes Mellitus; El cuidado personal; Teléfono; Atención de Enfermería.
INTRODUCTION

Diabetes mellitus (DM) is a chronic disease of increasing incidence. When installed and not treated properly can cause major repercussions, both in relation to disability and premature mortality, as the costs related to its control and management of its complications, such as retinopathy, neuropathy, heart disease, and neuropathic foot, personal, family and social impact.1

There are factors that can provide to people susceptibility to develop DM, among them are: genetic factor, hypertension, physical inactivity, obesity, alcohol consumption, age over or equal to 45 years old, impaired fasting glucose or impaired glucose tolerance previously identified, historic of gestational diabetes or parturition of newborns with more than 4.5kg.2

The increased prevalence contributes to DM becoming a public health problem, in addition to complications that can be generated, in particular those with monitoring and monitoring by trained professionals deficit. It is estimated that by 2025 there may be 11 million diabetics in the country, which means an increase of over 100% compared to 5 million diabetics, estimated in 2000.3

The monitoring of these users should be done with the assistance of a multidisciplinary team composed by physicians, nurses, nursing technician, dentist, dental assistant and community worker, nutritionist, social workers, psychologists and physical education professionals, especially the importance of the interdisciplinary approach to the prevention of diabetes and its complications;2 for both the nursing consultations to such user aim to addressing risk factors; guide drug, no drug treatment and changes in lifestyle; verifying adherence and possible complications in the treatment; referring the individual to the skilled professional when necessary, among other.4

The self-care practice ranges from the proper use of prescribed drugs, and may be insulin or oral hypoglycemic agents, to changes in lifestyle, such as daily exercise routine, proper nutrition, culminating with weight control and laboratory test results within normal ranges.5 The demands of health care have shown continued growth. Directed to this purpose, has been stimulated the development of diverse technologies for the diagnosis, follow-up of cases and guidelines.6

The phone has been used as a useful tool to supplementing necessary care to the user with diabetes. There are advantages, such as: long distance meet people, especially those who have limited mobility; reduce queues, which often are formed by people with questions or seeking guidance; is low cost; considered affordable; detect early warning signs for certain health problems.7,8

In this context, one question arose: what is the impact of nursing care by phone to the user with diabetes mellitus in self-care practice? It is expected that the resolution of this question can direct nursing care in accordance with deficits in self-care of patients with DM, aiming to avoid complications, ensure continuity of health care and longitudinality according to the real needs of patients therefore has the following objectives:

- Evaluating the influence of nursing care by phone in the practice of self-care performed by the user with diabetes mellitus.

METHODOLOGY

This is a cohort study, retrospective, held in an operator of healthcare plan with the program of nursing care by telephone to beneficiaries with DM. This operator has a follow-up protocol structured in such a disease, health indicators to be monitored: weight management and self-care indicators, with a duration of one year and may be renewed or not.

The monitoring of these users occurs through phone calls made by nurses and nursing students at intervals of at least every thirty days. In each contact occurs inquiry into aspects, such as nutrition, physical activity, medication use and weight control, and smoking and drinking. From the responses, the guidelines are made to the beneficiary. Each patient accompanied had an electronic health record, which was contained in a program called Previnne; with this all information regarding patients accompanied could be found in this program.

The study population consisted of 953 records of beneficiaries. The cohort group was calculated by the finite population consisting of 274 records of beneficiaries, randomly chosen. The criteria for inclusion were: to be in an operator of healthcare plan with the phone monitoring of these users occurs with this all information according to the real needs of patients therefore has the following objectives:

- Evaluating the influence of nursing care by phone in the practice of self-care performed by the user with diabetes mellitus.
practices were analyzed using the recommendations issued by the Ministry of Health. \(^1\)

The average statistical measures were calculated, standard deviation and standard error of the average. Comparisons of proportions were performed at the beginning of \(\chi^2\) test. Analysis with \(p < 0.05\) were considered statistically significant. Data were processed using SPSS, version 17.0.

This study followed the ethical and legal principles of Resolution 196/96. For both, it was requested authorization from the institution, whose director has signed the Statement of Custodian, allowing the collection of data in the electronic medical records of patients. Obtained the approval of the Federal University of Ceara Research Ethics Committee, under protocol number 170/11.

### RESULTS

Among the findings, found that from 274 patients with DM who participated in the program of monitoring by telephone, 54\% were male and 46\% female. The average age was of 67 years old, with a predominance of older people (78.8\%), ie, aged sixty or older.

The distribution and comparison of the conduction of self-care activities of the user with DM are shown in Table 1.

<table>
<thead>
<tr>
<th>Self-Care Practice</th>
<th>Beginning</th>
<th>Final</th>
<th>p de *^a^</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed control</td>
<td>n =274</td>
<td>225</td>
<td>82,1</td>
</tr>
<tr>
<td>Physical exercise</td>
<td>142</td>
<td>51,8</td>
<td>163</td>
</tr>
<tr>
<td>Correct use of drug therapy</td>
<td>259</td>
<td>94,5</td>
<td>258</td>
</tr>
<tr>
<td>Abstinence from smoking</td>
<td>232</td>
<td>84,7</td>
<td>264</td>
</tr>
<tr>
<td>Abstinence from Alcoholism</td>
<td>180</td>
<td>65,7</td>
<td>211</td>
</tr>
</tbody>
</table>

Analyzing self-care practices, it was noticed that there was significant improvement \((p<0.05)\) of the following practices: eating habits, abstention from smoking and drinking; as well as improved physical exercise, but not significantly \((p>0.05)\). However, there was a small reduction of people who correctly followed the drug therapy, no significant difference \((p>0.05)\), which may be due to an improvement of the health of the user, which may have interfered following therapy drug.

<table>
<thead>
<tr>
<th>Self-Care Practice</th>
<th>Beginning</th>
<th>Male</th>
<th>Total</th>
<th>Female</th>
<th>Total</th>
<th>p de ^b^</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed control</td>
<td>n =274</td>
<td>119</td>
<td>225</td>
<td>111</td>
<td>137</td>
<td>92,6</td>
</tr>
<tr>
<td>Physical exercise</td>
<td>142</td>
<td>51,8</td>
<td>163</td>
<td>59,5</td>
<td>97</td>
<td>65,5</td>
</tr>
<tr>
<td>Correct use of drug therapy</td>
<td>259</td>
<td>94,5</td>
<td>258</td>
<td>94,2</td>
<td>140</td>
<td>94,6</td>
</tr>
<tr>
<td>Abstinence from smoking</td>
<td>232</td>
<td>84,7</td>
<td>264</td>
<td>96,4</td>
<td>141</td>
<td>95,3</td>
</tr>
<tr>
<td>Abstinence from Alcoholism</td>
<td>180</td>
<td>65,7</td>
<td>211</td>
<td>77,0</td>
<td>94</td>
<td>63,5</td>
</tr>
</tbody>
</table>

Evaluating self-care practices according to gender, at the beginning of patients monitoring it was found that women predominated in the wake of power control (84.1\%), medication (97.6\%), smoking abstention (93.7\%) and alcohol abuse (89.7\%), since men had the following percentages: 80.4\%, 91.9\%, 77.0\% and 45.3\%, respectively. While 58.1\% of men perform more exercise against 44.4\% of women.

Already at the end of the monitoring, men are taking care of the feeding better than women (92.6\%), of the physical exercise (65.5\%) and drug use (94.6\%), whose female percentages were: 88.1\%, 52.4\% and 93.6\%, respectively. However, more women joined the abstention from smoking and drinking. It was highlighted that men had greater difficulty in abstaining from alcohol use, with a percentage of 63.5\%.

Thus, we observed an increase of the membership of men in all self-care practices after a year of monitoring nursing via phone; women also improved, except for the monitoring of drug therapy.

Table 3 provides a comparison of the practice of self-care among adults and the elderly. It was considered adult who submit age equal or over 18 years old, or less than 60, while the older age group being equal or over 60.\(^9\)
Influence of nursing care by telephone in...

Table 3: Distribution of patients with diabetes mellitus, according to the practice of self-care related to age, at the beginning and after a year of nursing monitoring via telephone. Fortaleza-CE, 2011.

<table>
<thead>
<tr>
<th>Self-Care Practice</th>
<th>Beginning</th>
<th></th>
<th></th>
<th>Final</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adult</td>
<td>Elderly</td>
<td>Total</td>
<td>Adult</td>
<td>Elderly</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Feed control</td>
<td>42</td>
<td>72,4</td>
<td>183</td>
<td>84,7</td>
<td>225</td>
<td>82,1</td>
</tr>
<tr>
<td>Physical exercise</td>
<td>31</td>
<td>53,4</td>
<td>111</td>
<td>51,4</td>
<td>142</td>
<td>51,8</td>
</tr>
<tr>
<td>Correct use of prescribed</td>
<td>53</td>
<td>91,4</td>
<td>206</td>
<td>95,4</td>
<td>259</td>
<td>94,5</td>
</tr>
<tr>
<td>drugs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstinence from smoking</td>
<td>46</td>
<td>79,3</td>
<td>186</td>
<td>86,1</td>
<td>232</td>
<td>84,7</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>33</td>
<td>56,9</td>
<td>147</td>
<td>68,1</td>
<td>180</td>
<td>65,7</td>
</tr>
</tbody>
</table>

Comparing self-care practice among adults and the elderly, it was realized that adults with improved monitoring via phone the following practices: control diet, abstinence from smoking and drinking, ie, reduction in the self-care for physical exercise and use of prescription drugs; while the elderly have improved all the evaluated practices. Furthermore, it was found that there is a higher percentage of elderly who practice self-care in relation to adults, both before and after the follow-up by phone.

DISCUSSION

Regarding gender, it noticed a prevalence of diabetic males, contradicting found, for example, in the study conducted from August 2005 to May 2006 with a sample of 98 patients, which showed a representativeness of women, with 74.5%. It is noteworthy that the population assisted by the health plan is practically formed by bank employees, being a predominantly male population.

The present study showed an average age of 67 years old, ie, a prevalence of older people. Fact discrepant with data from a study conducted from August 2009, with users aged 18-65 selected from the Iranian Diabetes Association, which showed an average of 51.70 years old for users monitored via mobile message and of 53.71 years old for accompanied by telephone. The higher prevalence of elderly in the present study may be explained by greater adherence to the retired employees of the bank program.

Regarding eating habits, it was shown that there is a representative adherence to healthy habits, and this rate improved after one year of monitoring by phone. However, this fact can be contrasted with a low level of knowledge and adherence to healthy dietary habits of a population of low socioeconomic status with type 2 diabetes in a study of Nuevo León in the year 2010. This may be due to sample of this study have better economic conditions and more access to professional nutritionists and endocrinologists, which could explain high rates of healthy eating early in the program. However, with the strengthening of information provided through the phone these ratios improved further after a year, reinforcing the need for people with DM of a specialized nursing monitoring.

In relation to the practice of physical exercise, a multicenter study conducted in São Paulo in 2010 with the elderly population showed there was prevalence of DM patients sedentary; as it has been found that 71% of sedentary seniors in another observational study carried out in 2007. This phenomenon is disputed with the data from this study, which showed that, at the beginning, there was a prevalence of non-sedentary people, being improved after a year of monitoring. Such an occurrence can be supported as an effective method for using the phone as a strategy for promoting physical activity.

When evaluating the variable of correct use of drug therapy, one can show that the majority of the population did correct use and dosage respected. This variable also showed satisfactory results with users suffering from type 2 DM, containing 73.16% of users with appropriate use of medication. Therefore, one can understand that the carrier DM population, in general, has been making proper use of drug therapy, which is a positive point in therapy.

The guidelines about the use of medication must be continuously reinforced, given that many patients do not adhere to medication treatment before clinical manifestations. A study conducted in 2007, in São Paulo with 46 patients, found increased adherence to drug treatment in patients previously informed about the importance of treatment for disease control.

Regarding the smoking variable, we found a significant improvement regarding the cessation of smoking. It is understood that the nursing intervention by phone can be effective in smoking cessation, since there was a considerable jump in the percentage of non-smokers from baseline to the end, from 84.7% to 96.4%. As observed in the study developed in Australia in the period 2005-2007, in which there was intervention by phone for four months, reaching an improvement in percentage, from 13.8% to 9.6% of smokers.
Variable in alcoholism, it was detected that the study population was not characterized by making use of alcoholic beverages, being evidenced by the percentage of 65.7%, as found in the observational study of patients with diabetes mellitus users and hypertension and they were attended by the Family Health Program, in which 8.4% of the diabetic population of the study were routine use of alcohol. 17

Making an analysis of self-care practices regarding gender, we found that male subjects had a significant improvement in eating habits compared with women after one year of monitoring. This effect was unexpected, given that the study population is composed mostly by bank employees who often feed in restaurants and so justify not fractionate feed for lack of time. However, this can be explained by the fact that most were elderly retired, thus having more resources to maintain a healthy diet. These data differ from the results found in a study conducted at the Regional Rehabilitation Center in 2004, which emphasized that both genders with DM type 2 showed adequate feed. 12

As for the physical exercise comparing genres profile, we realized that earlier women were mostly sedentary, a fact that was reversed after a year of monitoring by phone. As for men, from the beginning, has not had sedentary profile, having improved after one year of nursing interventions. These findings are consistent with cross-sectional studies in 2005 and 2007, which showed, respectively, 32.6% and 29% of participants practiced exercise. 12-5

Doing analysis of smoking variable, it was evident that women had higher rates of abstinence, confirming the data obtained in a 2007 study, in which the percentage was 87.5% and 55.6% abstinence in women and men, respectively. 13

Already in the variable abstinence to alcoholism, it was evidenced that, at the beginning, women showed higher prevalence compared with men, who have obtained results below the ideal average. However, after a year of nursing interventions by phone, these results were improved, and emphasized the improvement obtained by males, starting to get in the prevalence abstinence from alcohol.

We performed a comparison between the adult and elderly population to determining which of these groups got satisfactory changes in relation to self-care practices. As for power, both had satisfactory percentage. This fact becomes relevant, since the elderly population assumes the importance of diet for the control of DM, this being mentioned by 68.6% of the study population. 12

In the variable physical exercise, the adults had lower indices after one year of monitoring, different from the elderly population, in which there was improvement. In the cross-sectional study with monitoring by telephone to encouraging the practice of physical exercise in Goiania, it was found that young men showed a more regular physical exercise, compared with women with no statistically significant difference in relation to age. 18

In the present study it showed that nursing care encourages elderly patients to the practice of physical exercise, not having the same success as adults. Therefore, it is up to the nurses of the program emphasizing the guidelines the adult population to make them aware of the accession of regular practice of physical exercise.

With regard to the correct use of drug therapy it was reduced after one year the percentage of adults with this proper practice. In contrast, there was an increase in the percentage of seniors who properly followed the prescription. What can you understand that nursing care, by phone, has significant membership of the elderly to take their medication properly value. In the study with a population of 60 years old or over, 57.8% of those who reported having diabetes mellitus, consider the proper use of oral medication or insulin important for the control of DM. 11

When compared to smoking cessation in the adult population with the elderly, both showed a significant increase in percentage, showing a considerable jump from 79.3% to 96.5%. In a study conducted in Minas Gerais/MG was identified a higher prevalence of smoking among elderly males, about three times more than in females, emphasizing that it is well established association between smoking and low socioeconomic status. 18 Corroborates up this information with that obtained in this study, since the population has high purchasing power and low prevalence of smoking.

**CONCLUSION**

Nursing care by telephone is considered a strategy for monitoring and for health education used by some private companies with users with chronic diseases with the aim of encouraging the practice of self-care to prevent complications. Thus, nursing care is a useful strategy for the membership of chronic patients on the practice of self-care.
The findings of the study showed that there is an influence of nursing care by phone in self-care practice of users patients with DM, therefore, it was noticed that at the beginning the majority of users already presented proper care as to food, practice physical exercise, appropriate use of drug therapy as prescription drugs, abstinence from smoking and alcohol consumption. However, after a year of monitoring and nursing interventions there was an increase in the percentage of users with appropriate self-care practices.

Comparing genders, it was noticed that more men joined self-care practices. Compared to adults and the elderly, was equivalent, having excelled in adults improved results regarding abstinence from smoking and drinking. Aged people stood in greater adherence to physical exercise.

It is concluded that nursing care is of utmost importance on prevention of diabetes mellitus - related complications. Among the limiting aspects of the study it was possible considering the difficulties in gathering data from users in Previnne program; problems regarding compliance of the users and accuracy of the information. Therefore, it is worth emphasizing the importance of this study and greater insights into the practice of nursing in order to contribute to evidence-based practice in Brazil, however, it is necessary to demonstrate that the use of the phone brings satisfactory results, as the assistance strategy Nursing for health promotion and prevention of complications as well as being economical. It encourages that new studies be conducted in different aspects of health, in order to verify the use of this method with different audiences.

REFERENCES

13. Chaves EC, Oyama SMR. Abordagem telefônica como estratégia para promoção da...
Influence of nursing care by telephone in...

Barbosa IM, Lima FET, Magalhães FJ et al.


