REVISTA DE ENFERMAGEM REFERÊNCIA
homepage: https://rr.esenfc.pt/rr/
ISSNe: 2182.2883

RESEARCH ARTICLE (ORIGINAL)

# Family health nurse interventions in the diabetes surveillance consultation

*Intervenções do enfermeiro de família na consulta de vigilância da diabetes consultation*

*Intervenciones de la enfermera de familia en la consulta de vigilancia de la diabetes*

Maria Jacinta Pereira Dantas[1,2,3]
https://orcid.org/0000-0001-6286-3854

Maria Henriqueta de Jesus Figueiredo[2,4]
https://orcid.org/0000-0001-7902-9751

Virgínia Guedes[2]
https://orcid.org/0000-0002-9654-3303

[1] Universidade Católica Portuguesa, Health Sciences Institute, Porto, Portugal

[2] Center for Research in Health Technologies and Services (CINTESIS), Porto, Portugal

[3] Local Health Unit of Alto Minho (ULSAM), Viana do Castelo, Portugal

[4] Nursing School of Porto, Porto, Portugal

**Corresponding author**
Maria Jacinta Pereira Dantas
E-mail: jacinta.dantas@ulsam.min-saude.pt

Received: 16.06.21
Accepted: 15.05.22

**Abstract**

**Background:** Family health nurses develop interventions aimed at the family as a unit, considering the transitions that occur throughout its life cycle, such as those resulting from the diagnosis of a chronic disease in one of its members, like diabetes.
**Objective:** Identify the interventions performed by the family health nurse in the diabetes surveillance consultation.
**Methodology:** Cross-sectional, exploratory, and descriptive study with a quantitative approach, using a simple randomized sample of 106 people with diabetes, who received nursing consultations from November to December 2019 in three family health units.
**Results:** Twenty-seven assessing interventions were carried out, out of the 30 planned in the data collection tool. The eight planned monitoring interventions were performed. Of the educating type, 15 of the 19 interventions were carried out.
**Conclusion:** Knowledge about the interventions carried out, most of which are diagnostic assessments, can contribute to the management of safe staffing of family health nurses, considering the care provided at all stages of the nursing process.

**Keywords:** nurse; nursing diagnosis; patient; diabetes *mellitus*; primary health care

**Resumo**

**Enquadramento:** Os enfermeiros de família desenvolvem intervenções direcionadas à família como unidade, considerando as transições que ocorrem ao longo do seu ciclo vital, como as que decorrem do diagnóstico de uma doença crónica num dos seus membros, como é o caso da diabetes.
**Objetivo:** Identificar as intervenções realizadas pelo enfermeiro de família na consulta de vigilância da diabetes.
**Metodologia:** Estudo transversal, exploratório e descritivo de abordagem quantitativa, utilizando uma amostra aleatória simples de 106 pessoas portadoras de diabetes, que efetuaram consultas de enfermagem, de novembro a dezembro de 2019, em três unidades de saúde familiar.
**Resultados:** Foram realizadas 27 intervenções do tipo avaliar, das 30 integrantes do instrumento de colheita de dados. Nas do tipo monitorizar foram realizadas as oito previstas. Do tipo ensinar foram realizadas 15 das 19 intervenções.
**Conclusão:** O conhecimento sobre as intervenções realizadas, a maioria de avaliação diagnóstica poderá contribuir para a gestão da dotação segura dos enfermeiros de família, considerando os cuidados desenvolvidos em todas as etapas do processo de enfermagem.

**Palavras-chave:** enfermeiro; diagnóstico de enfermagem; paciente; diabetes *mellitus*; cuidados de saúde primários

**Resumen**

**Marco contextual:** Las enfermeras de família desarrollan intervenciones dirigidas a la familia como unidad, considerando las transiciones que ocurren a lo largo de su ciclo de vida, como las que resultandel diagnóstico de una enfermedad crónica en uno de sus miembros, como la diabetes.
**Objetivo:** Identificar las intervenciones realizadas por la enfermera de família en la consulta de vigilancia de diabetes.
**Metodología:** Estudio transversal, exploratorio y descriptivocon enfoque cuantitativo, utilizando una muestra aleatoria simple de 106 personas con diabetes, que realizaron consultas de enfermería, de noviembre a diciembre de 2019, entres unidades de salud de la familia.
**Resultados:** Se realizaron 27 intervenciones del tipo evaluación, de los 30 integrantes del instrumento de recolección de datos. En el tipo de seguimiento se realizaron los ocho previstos. Del tipo de enseñanza, se realizaron 15 de las 19 intervenciones.
**Conclusión:** El conocimiento sobre las intervenciones realizadas, la mayoría de las cuales son evaluaciones diagnósticas, puede contribuir para la gestión de la dotación segura de personal de enfermería de la familia, considerando el cuidado desarrollado en todas las etapas del proceso de enfermería.

**Palabras clave:** enfermero; diagnóstico de enfermería; cliente; diabetes mellitus; atención primaria de salud

**How to cite this article:** Dantas, M. J., Figueiredo, M. H., & Guedes, V. (2022). Family health nurse interventions in the diabetes surveillance consultation. *Revista de Enfermagem Referência*, *6*(1), e21084. https://doi.org/10.12707/RV21084

## Introduction

Currently, it is estimated that 463 million adults (20-79 years) are living with diabetes mellitus (DM) and, by 2045, this number will reach 700 million people (International Diabetes Federation [IDF] 2019). In 2019, Portugal had an age-adjusted prevalence in adults (20-79 years) that was between 9% and less than 12% (IDF, 2019). DM gives rise to various systemic complications, most of which are vascular diseases and are associated with decreased life expectancy and quality of life. These include microvascular complications, namely retinopathy, nephropathy, and neuropathy, and cardiovascular diseases consisting of coronary heart disease, stroke, and peripheral arterial disease, which are referred to as macrovascular complications or diabetic macroangiopathy. From this perspective, DM is insidious and progressive and has been well demonstrated to be closely related to cardiovascular diseases, which in turn is the most prevalent cause of morbidity and mortality (King & Grant, 2016). IDF (2019) highlights that type 2 DM can be prevented, or even its remission can be possible, provided that this disease is effectively managed through education, support, adoption of healthy lifestyles, and using pharmacological therapy when necessary. The appropriate management of DM in Primary Health Care (PHC) requires the involvement of people with the disease, and coordinated efforts among the various health professionals (physicians, nurses, nutritionists, among others), referring to hospital care in situations that justify it. The PHC nurse plays a vital role in the follow-up of the person with DM by helping them understand the trajectory of the disease, as well as, empowering them to self-manage it (Nikitara et al., 2019). In particular, the family health nurse (FHN), who is the professional appointed for care delivery in the different stages of the life cycle, approaches the family as a care unit, promoting its empowerment, given the demands and specificities of its development (Decreto-Lei n.º 73/2017). The experience of a chronic disease by a family member reinforces this paradigm, considering that adjusting to the disease requires emotional and instrumental transformations in the person with the disease as well as in the other family members and in the family system as a whole (Silva et al., 2021). We aimed to identify the interventions performed by FHNs in the diabetes surveillance consultation to empower the person with DM to manage their disease, which will certainly also translate into health gains for the family as a unit.

## Background

DM is a potentially preventable chronic disease whose progression is strongly influenced by the individual's behaviors, thus requiring changes in lifestyle habits. Considering the complexity of the family system, the FHN assumes that cognitive, behavioral, or affective changes in the person with DM will impact the family as a whole and its members individually and may lead to difficulties in some domains of family life (Souza et al., 2021). Thus, in this process, the FHN should promote the enhancement of the family system's strengths and resources in the different stages of the life cycle, taking into account that the family's and the person's value system directly influence health behaviors, as well as the ability to restructure when faced with the diagnosis of chronic disease (Figueiredo, 2012).

In primary care, the Family Health Units (FHU) and the Personalized Health Care Units (PHCU) are where the FHN provides care to a group of families and monitors people with DM by complying with the guidelines issued in Order no. 3052/2013, which determined the creation of autonomous diabetes consultations in the Health Center Clusters (ACeS). The surveillance of DM performed in these consultations includes: i) glycemic control; ii) identification of cardiovascular risk factors; iii) monitoring of diet and physical exercise; iv) and monitoring of potential complications through periodic foot surveillance to prevent amputation. In 2018, PHC was responsible for the care of 85% of people with DM, and 74% benefited from nursing consultations (Direção-Geral da Saúde, 2019). The importance of nurses in chronic disease management has already been demonstrated in by nursing care-sensitive outcomes, namely: i) increased control of the therapeutic regime; ii) adherence behavior to the exercise regime; iii) improvement of clinical parameters (Marques et al., 2019; Azami et al., 2018); iv) adoption of healthy eating habits; v) and adherence to foot self-monitoring (Marques et al., 2019). It is expected that, within the scope of the diabetes surveillance consultation, the nurse, together with the person defines goals and objectives to be achieved for the management of their disease, based on the principle of cooperation to optimize treatment adherence, early detection of complications, and glycemic control (Azami et al., 2018, Marques et al., 2019). Thus, since the nursing consultation is a resource in the treatment of people with DM, with regard to disease management and prevention of complications, as well as the health gains that are sensitive to nursing care, it is important to identify the interventions performed by nurses to achieve the established goals.

## Research Question

Which interventions are performed by FHNs in the diabetes surveillance consultation?

## Methodology

A quantitative, exploratory, descriptive cross-sectional study was carried out. Simple randomization was used for the sample, considering the number of diabetes surveillance consultations performed by the FHN of an ACeS in northern Portugal in 2018, corresponding to 6308 consultations. The participants were selected from the FHN's work schedule for each work day. It was defined that, to ensure randomness, for every two users scheduled for a family health consultation, the second user would

be selected as a potential participant. In situations where four or more users were scheduled, the users with even numbers (e.g., 1; 2; 3; 4; 5) should be selected.
The ACTENFF_CE_DIA grid was constructed within the scope of a larger research project that aimed to assess the workload of the FHN in the management of chronic diseases. It was validated using the Delphi technique.
The ACTENFF_CE_DIA consists of a grid with 69 predefined items of nursing interventions that can be used in diabetes surveillance consultations. The care interventions are represented by 29 assessing interventions, 8 monitoring interventions, 19 educating interventions, 2 preparing interventions, 1 planning intervention, 1 training intervention, 1 promoting intervention, 1 administering intervention, 1 referring intervention, 1 helping intervention, and 1 encouraging intervention. The non-care activity consists of interventions related to welcoming, infection control procedures, continuity of care procedures, and care documentation. The grid allows adding interventions that the nurse performs but are not predefined. Each intervention is associated with the variable "conducted", which will be identified by (Yes/No).
Data were collected by the FHNs (self-report) who volunteered to do so, from November to December 2019, in three FHUs. An online platform called Actenff.pt was used as a resource, where the scale and the user's and family health nurse's informed consents are uploaded. To access the platform, the FHN had to create an access login and password. The study was approved by the Ethics Committee for Health under opinion no. 31/2019.
Data analysis was performed by describing categorical variables, calculating absolute and relative frequencies and continuous variables, by analyzing the mean, standard deviation, and range. For this purpose, descriptive statistics, appropriate to the nature of the data, were used, using SPSS Statistic, version 25.0.

## Results

Sixteen FHNs and 106 people diagnosed with DM participated in the study.
The sample of users is very equitable regarding the gender of participants: 51.9% ($n$ = 55) female and 48.1% ($n$ = 51) male, with a minimum age of 34 years, a maximum of 97 years, and a mean of 71.7 years. It presents an index of independence of 79.2% (84).
The interventions performed by the FHNs in the diabetes surveillance consultation are presented by the care and non-care domains. The care domain comprises *assessing*, *monitoring*, *educating*, *preparing*, *promoting*, *administering*, *referring*, *helping*, and *encouraging* interventions. The non-care domain consists of interventions related to *welcoming*, *procedures*, and *documentation*.

### *Nursing interventions of the care dimension*

Interventions related to the *Assessing* subdomain
Table 1 shows the distribution of the absolute and relative frequency of the items in the *assessing* subdomain. For this subdomain, 30 interventions were suggested in the grid, of which 27 were performed. The most frequently performed interventions were: assessing the risk for diabetic foot ulcers (50.0%); assessing knowledge, potential, and capacity for foot self-monitoring/self-control (34.0%); assessing knowledge and potential to improve knowledge about diabetes (31.1%); assessing adherence behaviors to the exercise regime (30.2%); assessing adherence behaviors to the dietary regime (29.2%); assessing adherence behaviors to the medication regime (24.5%); assessing adherence to the immunization regime (23.6%). There was no record of the interventions: assessing knowledge, potential, and capacity for blood pressure self-monitoring/self-control; assessing knowledge and potential to reduce consumption of other substances; and assessing knowledge and potential to reduce smoking.

**Table 1**

*Distribution of the absolute and relative frequency of the items of the Assess subdomain*

| | Interventions conducted | | | |
|---|---|---|---|---|
| | No | | Yes | |
| | *n* | % | *n* | % |
| + ASSESSING subdomain | | | | |
| Assessing personal background | 87 | 82.1 | 19 | 17.9 |
| Assessing knowledge and potential to improve knowledge about diabetes | 73 | 68.9 | 33 | 31.1 |
| Assessing alcohol consumption | 91 | 85.8 | 15 | 14.2 |
| Assessing knowledge and potential to reduce alcohol consumption | 102 | 96.2 | 4 | 3.8 |
| Assessing smoking | 95 | 89.6 | 11 | 10.4 |
| Assessing knowledge and potential to reduce smoking | 106 | 100 | --- | --- |
| Assessing consumption of other substances | 105 | 99.1 | 1 | 0.9 |
| Assessing knowledge and potential to reduce consumption of other substances | 106 | 100 | --- | --- |
| Assessing adherence behaviors to the dietary regime | 75 | 70.8 | 31 | 29.2 |
| Assessing knowledge, potential, and capacity to manage the dietary regime | 84 | 79.2 | 22 | 20.8 |
| Assessing adherence behaviors to the exercise regime | 74 | 69.8 | 32 | 30.2 |
| Assessing knowledge, potential, and capacity to improve the exercise regime | 89 | 84.0 | 17 | 16.0 |
| Assessing adherence behaviors to the medication regime | 80 | 75.5 | 26 | 24.5 |
| Assessing knowledge, potential, and capacity to manage the medication regime | 92 | 86.8 | 14 | 13.2 |
| Assessing adherence behaviors to the therapeutic regime | 90 | 84.9 | 16 | 1.1 |
| Assessing knowledge, potential, and capacity to manage the therapeutic regime | 99 | 9.4 | 7 | 6.6 |
| Assessing knowledge, potential, and capacity to self-monitor/self-control | 97 | 91.5 | 9 | 8.5 |
| Assessing knowledge, potential, and capacity for foot self-monitoring/self-control | 102 | 96.2 | 4 | 3.8 |
| Assessing adherence behaviors to foot self-monitoring | 70 | 66.0 | 36 | 34.0 |
| Assessing knowledge, potential, and capacity for blood glucose self-monitoring/self-control | 105 | 99.1 | 1 | 0.9 |
| Assessing adherence behaviors to blood glucose self-monitoring | 92 | 86.8 | 14 | 13.2 |
| Assessing knowledge, potential, and capacity for blood pressure self-monitoring/self-control | 106 | 100 | --- | --- |
| Assessing adherence behaviors to blood pressure self-monitoring | 102 | 96.2 | 4 | 3.8 |
| Assessing knowledge, potential, and capacity for medication self-administration | 98 | 92.5 | 8 | 7.5 |
| Assessing medication self-administration | 100 | 94.3 | 6 | 5.7 |
| Assessing adherence to the immunization regime | 81 | 76.4 | 25 | 23.6 |
| Assessing knowledge and potential to improve knowledge about immunization | 104 | 98.1 | 2 | 1.9 |
| Assessing risk for diabetic foot ulcer | 53 | 50.0 | 53 | 50.0 |
| Assessing knowledge and potential to improve knowledge in diabetic foot ulcer prevention | 95 | 89.6 | 11 | 10.4 |
| Assessing acceptance of health status | 92 | 86.8 | 14 | 13.2 |

**Interventions related to the *Monitoring* subdomain**

The interventions of the *monitoring* subdomain are shown in Table 2. This subdomain consists of eight anthropometric and physiological parameters assessment interventions. Blood pressure was monitored in 97.2%, weight in 93.4%, heart rate in 80.2%, and body mass index (BMI) in 81.1% of the consultations performed. The glycated hemoglobin was monitored in 41.1% of the consultations, and blood glucose was only in 3.8% of the consultations performed.

**Table 2**

*Distribution of absolute and relative frequency of the items of the Monitoring subdomain*

| | Interventions conducted | | | |
|---|---|---|---|---|
| | No | | Yes | |
| | *n* | % | *n* | % |
| + MONITORING subdomain | | | | |
| Monitoring height | 55 | 51.9 | 51 | 48.1 |
| Monitoring weight | 7 | 6.6 | 99 | 93.4 |
| Monitoring BMI | 20 | 18.9 | 86 | 81.2 |
| Monitoring abdominal circumference (A | 47 | 44.3 | 59 | 55.7 |
| Monitoring blood pressure | 3 | 2.8 | 103 | 97.2 |
| Monitoring blood rate | 21 | 19.8 | 85 | 80.2 |
| Monitoring blood glucose | 102 | 96.2 | 4 | 3.8 |
| Monitoring glycated hemoglobin | 62 | 58.5 | 44 | 41.5 |

**Interventions related to *Educating* subdomain**

The *educating* subdomain is composed of 19 interventions, 15 of the proposed interventions were carried out, as shown in Table 3. The most frequent intervention was educating on nutrition (52.8%), followed by educating on diabetes (51.9%), educating on the importance of physical exercise (50.0%), educating on diabetic foot ulcer prevention (34.9%), educating on the importance of adhering to the dietary regime (27.45), and educating on the importance of self-monitoring/self-control (25.5%). The following interventions were not performed in any of the consultations: educating on the harmful effects of smoking, educating on medication, educating on the importance of blood pressure self-monitoring/self-control, and educating on immunization.

**Table 3**

*Distribution of absolute and relative frequency of the items of Educating subdomain*

| Interventions conducted | No | | Yes | |
|---|---|---|---|---|
| | *n* | % | *n* | % |
| + EDUCATING subdomain | | | | |
| Educating on diabetes | 51 | 48.1 | 55 | 51.9 |
| Educating on preventive care | 77 | 72.6 | 29 | 27.4 |
| Educating on the harmful effects of smoking | 106 | 100 | --- | --- |
| Educating on the harmful effects of substance use | 105 | 99.1 | 1 | 0.9 |
| Educating on the importance of adhering to the dietary regime | 68 | 64.2 | 38 | 35.8 |
| Educating on nutrition | 50 | 47.2 | 56 | 52.8 |
| Educating on complications resulting from alcohol consumption | 101 | 95.3 | 5 | 4.7 |
| Educating on the importance of adhering to the exercise regime | 53 | 50.0 | 53 | 50.0 |
| Educating on the importance of adhering to the medication regime | 82 | 77.4 | 24 | 22.6 |
| Educating on medication | 106 | 100 | --- | --- |
| Educating on the importance of adhering to the therapeutic regime | 88 | 83.0 | 18 | 17.0 |
| Educating on the importance of self-monitoring/self-control | 79 | 74.5 | 27 | 25.5 |
| Educating on the importance of foot self-monitoring/self-control | 105 | 99.1 | 1 | 0.9 |
| Educating on the importance of blood glucose self-monitoring/self-control | 104 | 98.1 | 2 | 1.9 |
| Educating on the importance of blood pressure self-monitoring/self-control | 106 | 100 | --- | --- |
| Educating on medication self-administration | 102 | 96.2 | 4 | 3.8 |
| Educating on immunization | 106 | 100 | --- | --- |
| Educating on diabetic foot ulcer prevention | 69 | 65.1 | 37 | 34.9 |
| Educating on adaptive strategies | 102 | 96.2 | 4 | 3.8 |

Table 4 shows the interventions related to the *preparing*, *promoting*, *administering*, *referring*, *helping*, and *encouraging* subdomains. They were grouped in the same table due to the small number of interventions performed in each subdomain. Regarding the *preparing* subdomain, the intervention "preparing a diet plan" was performed in 17.9% of the consultations, and "preparing a physical exercise plan" in 13.2% of the consultations. In the *encouraging* sub-domain, the intervention "encouraging emotional expression" was performed in 17.9% of the consultations. Interventions of the *promoting* and *helping* subdomains were carried out in 7.5%-4.7% of the consultations. No interventions of the *administering* and *referring* subdomains were performed in this study.

**Table 4**

*Distribution of absolute and relative frequency of the items of the PREPARING, PROMOTING, ADMINISTERING, REFERRING, HELPING, AND ENCOURAGING subdomains*

| Interventions conducted | No | | Yes | |
|---|---|---|---|---|
| Subdomains | *n* | % | *n* | % |
| + PREPARING subdomain | | | | |
| Preparing a meal plan | 87 | 82.1 | 19 | 17.9 |
| Preparing a physical exercise plan | 92 | 86.8 | 14 | 13.2 |
| + PROMOTING subdomain | | | | |
| Promoting adherence to vaccination (PNV and others) | 101 | 95.3 | 5 | 4.7 |
| + ADMINISTERING subdomain | | | | |
| Administering a vaccine | 106 | 100 | --- | --- |
| + REFERRING subdomain | | | | |
| Referring to other health professionals | 106 | 100 | --- | --- |
| + HELPING subdomain | | | | |
| Helping the person in promoting health status acceptance | 98 | 9.,5 | 8 | 7.5 |
| + ENCOURAGING subdomain | | | | |
| Encouraging emotional expression | 87 | 82.1 | 19 | 17.9 |

***Nursing interventions in the non-care domain***

The non-care domain is composed of 4 subdomains, as shown in Table 5. The subdomain of *welcoming* the diabetic patient was performed in 95.3% of the consultations, followed by the subdomain of *continuity of care* (90.6%). The subdomain of infection control *procedures* was performed in 37.7% of the consultations and the subdomain of care *documentation* in 17.9%.

**Table 5**

*Distribution of absolute and relative frequency of the non-care dimension items; procedures, welcoming, and documentation*

| Interventions conducted | No | | Yes | |
|---|---|---|---|---|
| Subdomains | *n* | % | *n* | % |
| + PROCEDURES subdomain | | | | |
| Infection control procedures | 66 | 62.3 | 40 | 37.7 |
| Continuity of care procedures | 10 | 9.4 | 96 | 90.6 |
| + WELCOMING subdomain | | | | |
| Welcoming the person | 5 | 4.7 | 101 | 95.3 |
| + DOCUMENTATION subdomain | | | | |
| Care documentation (records) | 87 | 82.1 | 19 | 17.9 |

## Discussion

In the diabetes surveillance consultation, the FHN performs care interventions in the form of diagnostic assessment in order to (i) assess knowledge and the potential to improve knowledge about diabetes; (ii) assess the risk for diabetic foot ulcers; (iii) assess knowledge, potential, and capacity to perform foot self-monitoring/self-control; (iv) assess adherence behaviors to the exercise regime; (v) assess adherence behaviors to the dietary regime; (vi) assess adherence behaviors to the medication regime; (vi) and assess adherence to the immunization regime. It was found that the intervention "assessing knowledge, capacity or adherence behaviors" is significantly represented in

the study results, which seems to be related to the fact that DM is a chronic disease in which self-management is crucial to prevent complications. One of the goals of DM self-management is to control blood glucose, prevent acute and late complications, and promote the person's quality of life (Rasoul et al., 2019), confirming the results obtained. The monitoring of anthropometric and clinical parameters (weight, height, body mass index, abdominal circumference, blood pressure, and glycated hemoglobin) aims to assess the disease control status. These findings are in line with the study of Chetoui et al. (2020), which reinforces the importance of these interventions for disease control and quality of life maintenance.

In this study, weight was monitored in 93.4% of the consultations performed by the family health nurses, BMI was calculated in 81.1%, and abdominal circumference was assessed in 55.7%. These findings are corroborated by Chetoui et al. (2020), who argue the importance of assessing these parameters and the relationship they establish with disease control.

The assessment of the risk for diabetic foot ulcers was performed in 50% of the FHN consultations in this study, which is slightly higher than the 46% found by Daly et al. (2015). This intervention is essential in the nursing consultation with the person with DM since it is estimated that 15% of people with diabetes will develop foot ulcers throughout their lives, according to IFD predictions (2020). This condition is a health risk for people with DM, with negative consequences on their overall quality of life and often resulting in lower limb amputations.

The educating interventions performed by FHNs highlight health education within the scope of the diabetes surveillance consultation, which is in line with the studies of Marques et al. (2019) and Azami et al. (2018). These findings are more prominent with regard to education on nutrition, the pathophysiology of the disease, physical exercise, and the prevention of diabetic foot ulcers. This is consistent with the results confirmed by Daly et al. (2015) and Gagliardino et al. (2019), who reinforce that educating the person with diabetes provides the knowledge and skills necessary for self-management and promotes a positive attitude in controlling and treating the disease. Similarly, Marques et al. (2019) demonstrate in their studies the effectiveness of educational interventions in DM control, particularly in significantly decreasing HbA1C, combined with dietary care, physical exercise, and diabetic foot monitoring. The results of this study stress the need to prioritize interventions in health promotion and prevention of complications. They should be conducted within the family context, together with those aimed at family roles, family coping, and family process, taking into account that family unity is related to treatment adherence by the person with diabetes, as family conflicts hinder this adherence (Souza et al., 2021).

As for non-care interventions, it was found that these occurred in approximately 90% of the consultations performed, such as the scheduling of a new nursing consultation. This study demonstrated the importance of interprofessional continuity of care through the referral of users to other health professionals. According to Miller et al. (2019), professionals who are able to work positively with other professionals are the basis for person- and family-centered care that translates into health outcomes. Souza et al. (2019) also identified care documentation, infection control, and continuity of care procedures as interventions performed by nurses that have an influence on direct care to the person.

However, the study results with regard to care documentation show that this intervention is developed much less frequently than the remaining non-care interventions, which may influence the continuity of care. They are in line with the study conducted by De Marinis et al. (2010), who reported that only 40% of the activities were recorded, corresponding to 37% of the assessments and 45% of the interventions, calling into question the importance of nursing records as a mirror of the work performed by nurses.

The interventions performed by the FHN during the consultation focus on disease control and the empowerment of the patient for self-management; there are no specific interventions aimed at the family as a care unit. However, the relevance of the family as a care unit is highlighted, particularly due to the association between family support and glycemic control of family members with diabetes (Miranda et al., 2021).

In general, this study showed that diabetes surveillance consultation requires comprehensive and diversified nursing care interventions because of the complexity of the person with diabetes, who is the target of the care delivered by the FHN. Chronic disease surveillance in the family may constitute a challenge in the co-evolutionary path of the FHN.

## Conclusion

The results of the study show that the FHN conducted *assessing*, *monitoring*, *educating*, *preparing*, *promoting*, *administering*, *referring*, *helping*, and *encouraging* interventions in the diabetes surveillance consultation, reflecting a care methodology based on the nursing process.

In non-care activities, documentation procedures are a large part of this dimension of care. Information systems register data related to care delivered by the FHNs and, thus, are crucial to the continuity of care and access to information and are proof of the impact of the care delivered by FHNs.

More evidence is needed regarding interventions led by FHNs in care delivery to families in health/illness transitions, such as a member having DM, to promote a practice focused on maximizing the strengths, resources, and skills of families and each of their members.

**Author Contributions**

Conceptualization: Dantas, M. J, Figueiredo, M. H.
Methodology: Dantas, M. J., Figueiredo, M. H.
Data curation: Dantas, M. J., Figueiredo, M. H.
Writing - original draft: Dantas, M. J., Figueiredo, M. H., Guedes, V.

## References


Azami, G., Soh, K. L., Sazlina, S. G., Salmiah, M. S, Aazami, S., Mozafari, M., & Taghinejad, H. (2018). Effect of a nurse-led diabetes self-management education program on glycosylated hemoglobin among adults with type 2 diabetes. *Journal of Diabetes Research*, *2018*, Article ID 4930157. https://doi.org/10.1155/2018/4930157

Chetoui, A., Kaoutar, K., Elmoussaoui, S., Boutahar, K., El Kardoudi, A., Chigr, F., & Najimi, M. (2020). Prevalence and determinants of poor glycaemic control: A cross-sectional study among Moroccan type 2 diabetes patients. *International Health*. https://doi.org/10.1093/inthealth/ihz107

Daly, B., Arroll, B., Kenealy, T., Sheridan, N., & Scragg R. (2015). Management of diabetes by primary care nurses in Auckland, New Zealand. *Journal of Primary Health Care*, *7*(1), 42-49. https://doi.org/10.1071/HC15042

Decreto-Lei n.º 73/2017 de 21 de junho, Ministério da Saúde. Diário da República: Série I n.º 118 (2017). https://dre.pt/application/file/a/107542705

De Marinis, M. G., Piredda, M., Pascarella, M. C, Vincenzi, B., Spiga, F., Tartaglini, D., Alvaro, R., & Matarese, M. (2010). 'If it is not recorded, it has not been done!'? Consistency between nursing records and observed nursing care in an Italian hospital. *Journal of Clinical Nursing*, *19*(11-12), 1544-1552. https://doi.org/10.1111/j.1365-2702.2009.03012.x

Despacho n.º 3052/2013 de 26 de fevereiro de 2013, Ministério da Saúde. Gabinete do secretário de estado adjunto do Ministro da Saúde. Diário da República: Série II n.º 40 (2013). https://files.dre.pt/2s/2013/02/040000000/0752707529.pdf

Direção-Geral da Saúde. (2019). *Relatório* do *Programa Nacional para a Diabetes: Desafios e estratégias 2019*. https://www.dgs.pt/documentos-e-publicacoes/relatorio-programa-nacional-para-a-diabetes-desafios-e-estrategias-2019.aspx

Figueiredo, M. H. (2012). *Modelo dinâmico de avaliação e intervenção familiar: Uma abordagem colaborativa em Enfermagem de Família*. Lusociência.

Gagliardino, J. J., Chantelot, J. M., Domenger, C., Ramachandran, A., Kaddaha, G., Mbanya, J. C., Shestakova, M., Chan, J., & IDMPS Steering Committee. (2019). Impact of diabetes education and self-management on the quality of care for people with type 1 diabetes mellitus in the Middle East (the International Diabetes Mellitus Practices Study, IDMPS). *Diabetes Research and Clinical Practice*, *147*, 29–36. https://doi.org/10.1016/j.diabres.2018.09.008

International Diabetes Federation. (2019). *IDF Diabetes Atlas: Ninth edition 2019*. https://diabetesatlas.org/atlas/ninth-edition/

King, R. J., & Grant, P. J. (2016). Diabetes and cardiovascular disease: Pathophysiology of a life-threatening epidemic. *Herz*, *41*(3), 184-192. https://doi.org/10.1007/s00059-016-4414-8

Marques, M. B., Coutinho, J. F., Martins, M. C., Lopes, M. V., Maia, J. C., & Silva, M. J. (2019). Intervenção educativa para a promoção do autocuidado de idosos com diabetes mellitus. *Revista da Escola de Enfermagem da USP*, *53*, e03517. http://dx.doi.org/10.1590/S1980-220X2018026703517

Miller, R., Scherpbier, N., Van Amsterdam, L., Guedes, V., & Pype, P. (2019). Inter-professional education and primary care: EFPC position paper. *Primary Health Care Research & Development, 20*, E138. https://doi.org/10.1017/S1463423619000653

Nikitara, M., Constantinou, C. S., Andreou, E., & Diomidous, M. (2019). The role of nurses and the facilitators and barriers in diabetes care: A mixed methods systematic literature review. *Behavioral Sciences*, *9*(6), 61. https://doi.org/10.3390/bs9060061

Rasoul, A. M., Jalali, R., Abdi, A., Salari, N., Rahimi, M., & Mohammadi, M. (2019). The effect of self-management education through weblogs on the quality of life of diabetic patients. *BMC Medical Informatics and Decision Making, 19*, Article number 205. https://doi.org/10.1186/s12911-019-0941-6

Silva, J. P., Crepaldi, M. A., & Bousfield, A. B. (2021). Representações sociais e doenças crônicas no contexto familiar: Revisão integrativa. *Revista Psicologia e Saúde*, *13*(2), 125-140. https://doi.org/10.20435/pssa.v13i2.964

Souza, P., Cucolo, D. F., & Perroca, M. G. (2019). Carga de trabalho de enfermagem: Influência das intervenções de cuidados indiretos. *Revista da Escola de Enfermagem da USP*, *53*, e03440. https://doi.org/10.1590/S1980-220X2018006503440

Souza, Y. R., Silva, J. A., Silva, I. T., Souza, T. A., & Medeiros, M. R. (2021). The influence of the family on autonomy and participation in the care of the subject diagnosed with Diabetes mellitus. *Research, Society and Development*, *10*(4), e56710414113. http://dx.doi.org/10.33448/rsd-v10i4.14113