



RESEARCH ARTICLE

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EVALUATION OF THE STRUCTURE AND MULTIPROFESSIONAL CARE PROCESS IN *DIABETES MELLITUS* IN PRIMARY HEALTH CARE

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ABSTRACT

The objective was to evaluate the structure and process of multiprofessional care of users with type 2 diabetes in the Primary Health Care. This was a cross-sectional study with descriptive approach, with a sample of 127 medical records and 12 Health Units of the Northeast of Brazil. Data were collected through direct observation. The analysis was supported by the ordinance and guidelines of the Ministry of Health, based on the classic reference of health services evaluation proposed by Donabedian. The results showed that the structure investigated contributed, in part, to the maintenance of the flow of care, not fully meeting the needs of users and/or professionals. The care process was weakened, characterized by the absence of information in medical records, emphasis on drug therapy, modest stratification of cardiovascular risk, request of exams, identification of complications, and referrals. The study led to the conclusion that it is necessary to strengthen clinical care with respect to comprehensive assistance to users and record of the actions taken to ensure the quality of care, multiprofessional communication, systematic follow-up of the users, planning of actions, evaluation of services rendered, and research, in addition to ethically and legally support to the caregivers and patients.

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INTRODUCTION

In the last decades, the debate on health assessment was mainly based on the analysis of ost-effectiveness. Currently, it is necessary to consider health systems more broadly, focusing on improving the quality of care. In this way, the intense discussion about the need to institutionalize the evaluation of health practices stands out. Despite the efforts made, there is little research on how to relate different elements to clinical care, and studies addressing relationships between structure and process dimensions are absent (Furtado *et al.*, 2018). Parallel to the strengthening of Primary Health Care (PHC),

the need to carry out evaluations at this level of care has been reinforced, due to its importance as manager of health care. This type of practice is capable of providing subsidies to decision-making processes, identifying problems, addressing health needs, dealing with the effects of interventions, identifying and correcting problems, and providing a feedback to health teams, managers, politicians and communities (Akerman and Furtado, 2016). The characteristics of the resources applied in health care, whether physical, human, material, organizational or functional, accessible to health care, are considered as structure. The technical activities performed by health professionals are considered as processes and are relevant for the analysis of the competence of health teams in the management of the health-disease process (Donabedian, 1990). Thus, health evaluation is useful in the context of

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chronic noncommunicable diseases (CNCD), especially diabetes mellitus (DM), which has a high prevalence and mortality rate. In 2017, a total of 425 million diabetics were identified in the world between the age group of 20-79 years. Brazil is responsible for 13.3 million people with diabetes aged 18-99 years and 141,898 deaths as a consequence of chronic complications, constituting a serious public health problem (International Diabetes Federation, 2017). In diabetes care, evaluation is considered an inseparable strategy of planning, for it favors the decision-making and qualification of the care provided to users by multiprofessional health teams, as well as the understanding of the structural and assistance problems that hinder the care to diabetes patients (Carvalho and Shimizu, 2017). Despite the importance of the evaluative practice, incorporating it within the scope of the Unified Health System (SUS) in a transversal way to any planning and management process is still a challenge, because it is superficial, punctual, prescriptive, bureaucratic and little integrated with practices. This hampers the contribution of the evaluation to the decision-making processes and the training of professionals. In this perspective, PHC represents an opportunity to overcome the challenge of institutionalizing evaluations, and should be treated as a strategic locus for the mobilization of the evaluative potential in health (Oliveira and Reis, 2016). In this sense, this study aimed to evaluate the structure and process of multiprofessional care to PHC users with type 2 diabetes (DM2).

MATERIALS AND METHODS

This is a cross-sectional study with descriptive approach based on the classic reference proposed by Donabedian (1990) on evaluation of health services. The study was developed in the period from March 2015 to April 2016, in 12 Basic Health Units (BHU) in the Northeast Region of Brazil. For the evaluation of the process through professional registration, a population of 420 medical records of users with diabetes enrolled in the selected units was considered. The medical records of patients with a diagnosis of T2DM were included; those with absence of records or whose outcome was death were excluded. This resulted in a final sample of 127 medical records. A semi-structured form was used. The information collected was: number of health care consultations and technical activities (weight, height, body mass index - BMI), blood pressure, abdominal circumference, capillary glycemia, feet evaluation, ophthalmologic evaluation, laboratory tests, guidelines on drug and non-drug therapy, and education against smoking. The structure dimension was evaluated through direct observation, having as a data collection instrument a structured form with variables related to permanent material, drugs and supplies. Regarding permanent material, the following items were chosen: aneroid sphygmomanometer, cuff of various sizes, stethoscope, anthropometric scale, measuring tape, glucose meter, and 128Hz tuning fork. Regarding drugs, the study considered the existence of: glibenclamide 5mg (tablet), metformin hydrochloride 500mg (tablet), gliclazide 30mg (tablet), and Neutral Protamine Hagedorn (NPH) and regular insulin. Regarding the supplies, the existence of the following items was checked: insulin syringes of 100 and/or 50 units with needle of 8.0x3.0mm; capillary blood glucose measuring reagent strips; lancets for digital puncture; procedure gloves; cotton; 70% alcohol; container for disposal of sharps; Semmes-Weinstein monofilament 10g; sticks; paper towel, and liquid soap (Ministério da Saúde, 2007, 2013). The data

were scanned in Microsoft Excel (version 2013) spreadsheets, and analyzed in the open software Epi-Info, version 7.0, through descriptive statistics. The study was approved by the Research Ethics Committee with n° 1,025,277 (CAAE: 42388415.5.0000.5055).

RESULTS

The results obtained by means of the evaluation of the structure component, through the medical records of DM2 patients are shown in Tables 1 and 2.

Table 1. Numerical distribution and percentage of resources analyzed in the structure component

| Variables | n (%) |
|---|------------|
| Permanent materials | |
| Aneroid sphygmomanometer, stethoscope, glucose meter and cuff for adults | 12 (100.0) |
| Anthropometric scale and measuring tape | 11 (91.6) |
| Medicines | |
| Metformin Hydrochloride 500mg tablet | 11 (91.6) |
| Gliclazide 30mg tablet | 10 (83.3) |
| Glibenclamide 5mg tablet | 8 (66.6) |
| Supplies | |
| Cotton, 70% alcohol and lancets for digital puncture | 12 (100.0) |
| Procedure gloves, container for disposal of sharps and reagent strips for capillary glycemia measurement | 11 (91.6) |
| Liquid soap | 10 (83.3) |
| Paper towel | 6 (50.0) |
| Semmes-Weinstein Monofilament 10g | 1 (8.3) |
| 100 unit insulin syringes with 12 x 3.7 mm needle, 100 units with 8.0 x 3.0 mm coupled needle and 50 units with 8.0 x 3.0 mm coupled needle | 0 (0.0) |

n = 12 Basic Health Units

Table 2. Numerical distribution and percentage of variables of the multiprofessional service process by means of the registry in medical records

| Variables | n (%) |
|--------------------------------|------------|
| Health care | |
| Physicians | 109 (85.8) |
| Nurses | 66 (52.0) |
| Technical activities | |
| Guidelines on drug therapy | 107 (84.2) |
| Blood pressure | 88 (69.3) |
| Request for laboratory tests | 82 (64.5) |
| Guidelines on non-drug therapy | 75 (59.0) |
| Referral to other specialties | 38 (29.9) |
| Capillary glycemia | 28 (22.0) |
| Education against smoking | 15 (11.8) |
| Weight | 4 (3.1) |
| Height | 3 (2.4) |
| Feet evaluation | 1 (0.7) |

n = number of registries in medical records

DISCUSSION

The data on materials, drugs and supplies pointed in part to the commitment to provide adequate structure for the follow-up of users with T2DM, since good structural conditions can result in adequate care processes and consequent improvement in the quality of services (Donabedian, 1990). The permanent materials available make it possible to obtain information on weight, height, BMI, blood pressure, and waist circumference. The assessment of these parameters should be part of the physical examination of users with diabetes because they direct the flowchart of a therapeutic approach (Ministério da Saúde, 2013; Machado *et al.*, 2012). Despite the almost unanimous presence of anthropometric scales and measuring

tapes in the health units, when the health records were evaluated to identify the technical activities carried out by the professionals, the inadequate registry of BMI and waist circumference, important for the identification of obesity so prevalent in people with T2DM, was noticed (Sociedade Brasileira de Diabetes, 2017; American Diabetes Association, 2019). Risk stratification, according to a combined evaluation of BMI and waist circumference, allows individuals to infer the risk of presenting dyslipidemia, insulin resistance and cardiovascular diseases, which are chronic complications prevalent in the study population (Ministério da Saúde, 2013). This data allows inferring the impossibility of the health professionals surveyed to classify the cardiovascular risk due to absence of record of parameters. This is in line with another similar investigation in which the activities of risk-stratification registration were not implemented in the service (Santos *et al.*, 2015). Thus, the care process for the detection of diseases associated with T2DM for their early treatment is fragile.

Anthropometric measurements and blood pressure are simple and low cost parameters for clinical evaluation of T2DM patients. They are capable of detecting complications of the disease and identifying other conditions that, when associated, increase morbimortality and influence the treatment, besides serving as criteria for the screening of T2DM in asymptomatic adults (Ministério da Saúde, 2013). Regarding the material resources for checking blood pressure, all units had adult size cuffs, but no other cuff sizes were identified. The lack of varied cuffs, especially for obese users, prevents the accurate diagnosis of pressure levels, because the inadequacy of the cuff to the arm circumference of the user can result in under or overestimation of pressure levels, compromising the patient's evaluation and leading the professionals to non-performance or inappropriate performance of the procedure. It is, therefore, important to meet these needs, as well as to invest in professional training. Besides oral antidiabetic agents, most of the BHUs provide indispensable medications, evidencing results that are very close to other investigations (Santos *et al.*, 2015; Tavares *et al.*, 2014). These drugs are considered basic and sufficient, and with different mechanisms of action, taking into account the natural evolution of the disease (Ministério da Saúde, 2007, 2012). It is noteworthy that inappropriate free access to medication is one of the factors that influence the success of drug adherence by users of public health services, which makes it difficult to effectively control CNCD, pointing to the need to expand and qualify these services (Remondi *et al.*, 2014).

It was verified that BHUs did not have the insulin that is part of the list of medications distributed free of charge by SUS for the treatment of T2DM, bearing in mind that the distribution, as recommended by the Ministry of Health, is centralized in the Pharmaceutical Assistance Center (FAC) (Ministério da Saúde, 2007). However, it is believed that centralization of medication may directly interfere with the treatment and glycemic control of the users investigated, because geographical accessibility may represent a potential barrier to access these drugs (Oliveira *et al.*, 2016). Regarding the available supplies, the absence of Semmes-Weinstein monofilament 10g, sticks, and 128Hz tuning fork compromises the quality of the examination of physicians and nurses of the users' feet. These are important supplies for assessing the feet of users with T2DM in order to detect the loss of plantar protective sensitivity. The use of the monofilament or pin/stick

associated with the 128 Hz tuning fork is mandatory to assess the feet and is associated with a considerable decrease in lower limb amputations (Bakker *et al.*, 2016). Diabetic foot is among the most frequent complications of T2DM and its consequences can be traumatic to the life of the users because they involve chronic wounds and even amputations of lower limbs. The periodic examination of the feet facilitates the early identification and timely treatment of the alterations found, making possible the prevention of a high number of complications, the improvement of the quality of life, and the reduction of public expenditure. The systematic assessment of the feet should be associated with the patient's clinical history, previous lesions or amputations, and with the inability to perform self-care (Sousa *et al.*, 2017). Regarding the use of insulin syringes with short coupled needles identified in the study, the recommendations of the guidelines considered the best option for users with diabetes were not followed (Franco *et al.* 2017; Frid *et al.*, 2010; Gibney *et al.*, 2010). This leads users to purchase syringes with non- long coupled needles, which are lower cost. This may lead to the reuse of instruments and exposure of patients to poor glycemic control and skin lipodystrophies (Sociedade Brasileira de Diabetes, 2017). In this sense, it is the task of the multiprofessional teams to demand from managers the provision of adequate supplies for the development of their work process, in response to the needs of people with diabetes, to consolidate individual care adjusted to the clinical and therapeutic needs of each patient (Tavares *et al.*, 2014).

Regarding the process component, when the health records were evaluated to identify the technical activities developed by professionals, it can be inferred that there are flaws, as far as registration is concerned. The records had predominantly information from medical consultations. The average number of medical and nursing consultations was 2 per year, indicating a low frequency of registration of these consultations or little search for multiprofessional care. Considering the chronic nature of the disease and its complex treatment, with the use of multiple medications and changes in living habits, a greater number of consultations in the health records was expected. The findings of this study indicate the need to optimize the records of all the professionals involved in the clinical care for DM, the active search of users and the referral of these patients to other professionals of the team, if necessary. In order to increase adherence to multiprofessional consultations, actions such as monitoring and evaluation of the quality of services, follow-up of outcome evolution, negotiation of goals, definition of institutional support priorities and permanent education, as well as management advice, professional training for active search, humanized embracement, care based on good practice standards and promotion of self-care, and institutional support to promote comprehensiveness, bonding and monitoring of the patient over time in the PHC (Ministério da Saúde, 2012). Regarding the request of laboratory tests, 10.2% were of glycated hemoglobin (HbA1C), 12.6% of total cholesterol, 7.9% of low-density lipoprotein (LDL) cholesterol, 8.7% of high-density lipoprotein (HDL) cholesterol, 11% of triglycerides, 7.9% of serum creatinine, 5.5% of urea, and 0.8% of microalbuminuria. The data point to incongruous records of requests of laboratory tests, because they are part of the screening consultation and are considered necessary for diagnosis and therapeutic or preventive decisions. The frequency of request varies according to the individual follow-up of each patient, and takes into account the high cardiovascular risk in people with DM, the metabolic

control, the goals of care, and the existing complications (Ministério da Saúde, 2013). Fasting blood glucose and HbA1C tests should be performed twice a year in situations where the person is within the established glycemic target, and every 3 months if the person is above the agreed target. The other exams can be requested once a year, always considering the individual needs and the local protocols (Ministério da Saúde, 2013).

Regarding non-drug treatment guidelines in the medical records, 17.3% were related to the food plan and 12.6% to physical activity. It was verified a lack of systematic registration, evidencing that poor records hinder the evaluation of users and the follow-up for therapeutic control. Concerning the registration of actions, the main focus of the professionals was on the guidance regarding the use of medications, given the considerable percentage of notes made on this aspect in medical records. Although the relevance of such information and correct drug therapy are one of the pillars of T2DM treatment, a model linked to the medical prescription of drugs essential for the control of diabetes is indicated, with little appreciation of the registration of guidelines regarding the modification of eating habits and incentive to physical activity. Educational guidelines on non-drug and drug treatment contribute to greater adherence to therapy, improved glycemic/metabolic control, and reduced chronic complications of the disease, and are primary elements for the encouragement of self-care, intimately linked to the differentiated care and to the quality of health care professionals (American Diabetes Association, 2019, Taddeo *et al.*, 2012). Educational support has a positive impact on the behavior of diabetes patients through self-management, glycemic control and consequent metabolic balance, reflecting in the control of the evolution of the disease and in the prevention of acute and chronic complications. Individuals with diabetes must be responsible for their health through active participation (Souza *et al.*, 2017).

In relation to glycemic monitoring and the evaluation of T2DM complications, there was inadequate recording of fasting capillary glycemia, as well as evaluation of feet, eyes and kidneys. Glycemic control and prevention of diabetic neuropathy, diabetic foot, ophthalmologic and renal changes are expected results in the treatment of T2DM. It is worth mentioning that diabetes patients have a 15% risk of developing foot injuries throughout life (Ministério da Saúde, 2013). Diabetic retinopathy is the most common long-term complication of DM and is characterized as one of the leading causes of blindness worldwide (Liu *et al.*, 2017; Abu El-Asrar, 2013). Renal disease can affect 30 to 50% of individuals with diabetes (Sociedade Brasileira de Diabetes, 2017). It is important to write down these data in medical records to make it possible to screen for the therapeutic actions of health professionals. The inaccurate registration of important parameters by health professionals, listed in this study, may lead to impairment in the care for users with T2DM, especially regarding the analysis of the quality of care offered, aiming at achieving health comprehensiveness. The quality of the information noted in the health records reflects the quality of care, and the data of the multiprofessional team are fundamental to portray interventions and contribute to overcoming the isolation of knowledge and fragmentation of care (Andrade *et al.*, 2014). In this sample, it was still necessary to verify the lack of information in medical records regarding the actions of nursing technicians and dentists,

which is why there is no results regarding these professionals, although the initial intention of the study was also to include them in the evaluation. The lack of records makes it difficult not only to obtain information about specific aspects of the patient's health (such as oral health, for example), but also impedes systematic follow-up, evaluation of the quality of care, and interdisciplinary work among the different professionals who take care of these patients. In this scenario, it can be inferred that dentists do not appear to be engaged within the multiprofessional team. Physicians and nurses did not refer users to dentists, and there was a lack of involvement of dentists in health education activities and absence of notes about the oral health of patients in medical records. Dentists are important to achieve glycemic goals in T2DM, because the presence of infections such as periodontal disease leads to stimulation of the inflammatory response, which increases tissue resistance to insulin, leading to worsening of glycemic control (Sociedade Brasileira de Diabetes, 2017). It is suggested that new studies be performed to elucidate factors or conditions associated with the non-registration of the actions performed by professionals regarding the care of T2DM patients, in addition to evaluative studies that obtain data from diverse sources, such as interviews and participant observation. Despite the limitations, it is understood that the research brought results that can subsidize the interdisciplinary care in the care of people with diabetes in the PHC, and also reinforce the evaluation practice as a tool for the planning of actions.

Thus, the present study evidenced that the investigated structure contributed, in part, to maintenance of the care flow, since it did not fully meet the needs of users and/or of the professionals. Ineffective records corroborated a fragile care process, regarding the valorization of the completion of the clinical care process in its entirety, focusing on drug therapy and giving little emphasis on relevant aspects such as stratification of cardiovascular risk, request of exams, identification of complications, and referrals. In this way, it is necessary to strengthen the clinical care with regard to the integrality of users and the record of actions taken to ensure the quality of care, multiprofessional communication, systematic monitoring of users, planning of actions and evaluation of services provided and research, in addition to ethical and legal support to caregivers as well as patients.

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