

THE PERSPECTIVE OF VULNERABILITY IN THE DIABETIC FOOT EVALUATION FROM THE VIEWPOINT OF NURSES*

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ABSTRACT: The aim of this study was to describe the social determinants of health, identified by nurses as relevant to the establishment of vulnerabilities of people with diabetes mellitus. A descriptive exploratory study was conducted, and its methodology was divided into two phases: identification of social determinants of health that can impact the development of diabetic foot; and evaluation of the social determinants of health by nurses. The research was conducted between August and November 2014, with nurses working in Curitiba and its metropolitan region. Of 68 social determinants of health, 20 were considered influential to the development of diabetic foot. Of these, only three belong to social vulnerability. In conclusion, the social dimension of vulnerability is still poorly recognized by nurses as capable of influencing the development of diabetic foot.

DESCRIPTORS: Social determinants of health; Health vulnerability; Diabetic foot.

A PERSPECTIVA DA VULNERABILIDADE NA AVALIAÇÃO DO PÉ DIABÉTICO SOB A ÓTICA DE ENFERMEIROS

RESUMO: O objetivo deste estudo foi descrever as condições determinantes sociais em saúde, identificadas por enfermeiros como relevantes para o estabelecimento de vulnerabilidades da pessoa com Diabetes Mellitus. Pesquisa exploratória descritiva cuja metodologia foi dividida em duas fases: identificação das condições determinantes sociais em saúde capazes de influenciar no desenvolvimento do pé diabético; e avaliação das condições determinantes sociais em saúde por enfermeiros. A pesquisa foi realizada entre os meses de agosto e novembro de 2014, com enfermeiros atuantes no município de Curitiba e Região Metropolitana. Das 68 condições determinantes sociais em saúde, 20 foram consideradas influentes para o desenvolvimento do pé diabético. Destas, apenas 3 pertencem à vulnerabilidade social. Conclui-se que a dimensão social da vulnerabilidade ainda é fracamente reconhecida pelos enfermeiros como capaz de influenciar no desenvolvimento do pé diabético.

DESCRIPTORES: Determinantes sociais de saúde; Vulnerabilidade em saúde; Pé diabético.

PERSPECTIVA DE LA VULNERABILIDAD EN LA EVALUACIÓN DEL PIE DIABÉTICO SEGÚN LA VISIÓN DE ENFERMEROS

RESUMEN: El objetivo del estudio fue describir las condiciones sociales determinantes en salud, identificadas por enfermeros como de relevancia para el establecimiento de vulnerabilidades de la persona con Diabetes Mellitus. Investigación exploratoria con metodología dividida en dos fases: identificación de las condiciones sociales determinantes en salud capaces de influir en el desarrollo del pie diabético; y evaluación de las condiciones sociales determinantes en salud por los enfermeros. La investigación se realizó entre agosto y noviembre de 2014, con enfermeros actuantes en el municipio de Curitiba y Región Metropolitana. De las 68 condiciones sociales determinantes en salud, 20 fueron consideradas influyentes para el desarrollo del pie diabético. De ellas, solamente 3 forman parte de la vulnerabilidad social. Se concluye en que la dimensión social de la vulnerabilidad es aún francamente reconocida por los enfermeros como capaz de influir en el desarrollo del pie diabético.

DESCRIPTORES: Determinantes Sociales de la Salud; Vulnerabilidad en Salud; Pie Diabético.

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● INTRODUCTION

Diabetic foot is a disabling complication related to diabetes mellitus (DM) and consists of changes in skin, bones and joints of the feet that contribute to the appearance of ulcerations, infections and gangrene⁽¹⁾. Its treatment is costly, involves prolonged hospitalization, and in the United States precedes 85% of foot amputations⁽²⁻⁴⁾. In Brazil, hospitalizations related to this complication totaled 12,083 admissions in 2012; 13,341 in 2013; and 13,782 in 2014⁽⁵⁾.

Feet ulcers and amputations of patients with DM can be reduced by 50% to 60% through actions of prevention and disease management⁽⁶⁾. Such actions are mobilized by the risk assessment from protocols directed to the analysis of biological aspects of the individual with DM⁽⁷⁻¹¹⁾.

Despite the application of evaluation protocols, amputations continue to occur. Thus, the effectiveness of the evaluation is questioned. One of the hypotheses of the limitation of effectiveness is the paucity of analysis of aspects related to vulnerability and the social determinants of health (SDH). The inclusion of elements related to the social face of diabetes could increase risk assessment, complementing it with degrees of vulnerability, in order to establish the most appropriate interventions to the social reality of patients and their families.

The concept of vulnerability has been used to characterize population groups most affected by social aspects. The association between vulnerability and illness began during the epidemic of the acquired immune deficiency syndrome (AIDS), because the approach limited to biological conditions was not enough to explain the dissemination of the virus⁽¹²⁾.

The vulnerability analysis needs to be understood in three dimensions⁽¹²⁾: individual, programmatic and social. The individual dimension analyzes the individual's reaction to illness or the protection for certain diseases. The programmatic dimension includes topics related to the organization of health services and their responses to the health needs of people in their social contexts, and the training of professionals to identify vulnerability contexts. The social dimension involves social group issues, such as ethnicity, gender, beliefs and social exclusion; and structural aspects of the economy and public policy⁽¹²⁾.

By associating the three dimensions of vulnerability, it is possible to recognize the social determination of the health-disease process and approach health practices as social and historical⁽¹³⁾.

Worldwide, the search for the promotion of awareness about the importance of social determinants and the fight against health inequities motivated the proposal of specific committees for this problem. Brazil was the first country to create the National Commission on Social Determinants of Health (NCSDH), in 2006.

This commission uses as a reference the conceptual model of Dahlgren and Whitehead, in which SDH are stratified into: general socio-economic, cultural and environmental conditions; living and working conditions; social and community networks; individual lifestyle factors; and age, sex and hereditary factors. These sets represent conditions from the nearest to the individual to the most distant⁽¹⁴⁾. Given the complexity of this stratification, in this study, the various elements that make up each group of SDH were named, separately, as social determining conditions of health (SDCH), in order to differentiate the set of determinants from the isolated conditions.

In the context of the presented problem, two questions emerged: Which social determining conditions of health have the potential to interfere in the development of diabetic foot? Are these conditions recognized by nurses in order to establish degrees of vulnerability to complement the risk assessment of diabetic foot?

In this context, the aim of this study was to describe social determining conditions of health, identified by nurses, as relevant to the establishment of vulnerabilities of people with DM.

METHOD

This was a descriptive exploratory study developed in two phases: identification of SDCH, from the selection of SDH with the potential to influence the development of diabetic foot, categorizing them in the dimensions of individual, social and programmatic vulnerability; and evaluation of SDCH by nurse specialists.

The empirical basis used in the first phase was the final report of the NCSDH. The inclusion criterion for selecting the SDH, adopted by an independent researcher, was the possibility of direct or indirect relation to the development of diabetic foot. The adopted exclusion criteria were the direct relationship to children (example: low risk at birth); to groups of regional diseases (example: living in endemic areas); and to groups of specific contagious diseases (example: unsafe sexual activity in sexually transmitted diseases).

The selected SDCH were categorized in the dimensions of social, individual or programmatic vulnerability, by their adherence to the definition of each dimension.

The SDCH underwent evaluation by nurse specialists selected for their experience over six months in primary health care in the assistance of patients with DM, working in the city of Curitiba or its metropolitan region. There were no exclusion criteria.

The data collection instrument was a questionnaire built on an electronic platform, which contained a professional profile identification section and a script with 68 SDCH. Each nurse pointed out the influence of each condition for the development of diabetic foot, presented in a Likert scale with three divisions: no influence, weak influence and strong influence.

The selection of participants followed the snowball model. Initially, 18 professionals with the established profile were intentionally included. This group received an electronic message explaining the study, inviting them to participate and requesting them to forward the invitation to professionals of their network who met the established profile. This approach yielded a total of 71 respondents.

Of the 71 nurses, 77% worked for over five years in the care of diabetic patients; 82% were specialists; 42% worked in care and 20% in management; 80% were graduated for longer than six years; 86% were from the city of Curitiba; 27% worked in educational institutions and 24% in hospitals; 42% belonged to the municipal public service.

Results were analyzed by means of the content validity index (CVI), which calculates the correlation between two or more professionals and estimates the validity of an item. Items with a CVI above 80% are considered valid⁽¹⁵⁾. To establish the CVI, scores were assigned a score (0, 1 or 2) to the answer choices and total maximum score (TM) of 142, resulting in the equation in Figure 1.

The research proposal was approved by the Research Ethics Committee of the Pontifical Catholic University of Paraná under protocol number 789.051.

$$CVI = \frac{(NI \times 0) + (WI \times 1) + (SI \times 2)}{TM} \times 100$$

Figure 1 – Formula for calculating the CVI. Curitiba, Paraná, Brazil, 2015

Caption: CVI: Content validity index; NI: No influence; WI: Weak influence; SI: Strong influence; TM: Total maximum score. Source: ALEXANDRE; COLUCI, 2011.

● RESULTS

From the analysis of the final report of the NCSDH, 95 SDH were identified. Of these, 41 were selected for their possible relationship to the development of diabetic foot, being organized into 68 SDCH (Table 1).

Each one of the vulnerability dimensions was composed of a group of SDCH, 35 in the social dimension, 18 in the individual and 15 in the programmatic. After the nurses' evaluation, 20 SDCH reached a CVI over 80% (29.4% of the total), three in the social category (15%); nine in the individual (45%); and eight in the programmatic (40%). The description of this result is shown in tables 2 to 4.

Table 1 – Total of social determinants of health identified and selected according to the layers of the Dahlgren and Whitehead model, and the respective distribution on social determining conditions of health. Curitiba, Paraná, Brazil, 2015

Layers of the Dahlgren and Whitehead model	SDH Identified	SDH Selected	SDCH
General socio-economic, cultural and environmental conditions	8	4	7
Living and working conditions	39	17	27
Social and community networks	7	6	6
Individual lifestyle factors	14	9	15
Age, sex and hereditary factors	27	5	13
Total	95	41	68

Caption: SDH: Social determinants of health; SDCH: Social determining conditions of health.

Table 2 – Content validity index of the social determining conditions of health, related to the social determinants of health, classified as individual vulnerability. Curitiba, Paraná, Brazil, 2015

SDH	SDCH	CVI %
Malnourishment	Being malnourished	82.3
	Being dehydrated	80.9
Obesity	Being obese	97.1
Food availability	Being underweight	62.6
Inadequate nutrition	Having up to 3 meals a day	62.6
	Having 3 to 6 meals a day	33.8
	Having more than 6 meals a day	63.3
	Drinking less than 2 liters of water per day	64.7
High-fat diet	Not following the diet recommended by professionals	95.7
Diet rich in refined and processed foods	Adopting a diet rich in carbohydrates and sugars	98.5
	Adopting a high-sodium diet	80.2
Diet low in fruits and vegetables	Adopting a diet low in fruits and vegetables	61.3
Sedentary lifestyle	Physical activity up to 1 hour a week	64
	Physical activity between 1 and 4 hours a week	50.7
	Physical activity over 4 hours a week	38.7
Smoking and alcoholism	Making use of nicotine	91.5
	Drinking alcohol	89.4
Pre-existing diseases	Being a carrier of other chronic diseases	92.2

Caption: SDH: Social determinants of health; SDCH: Social determining conditions of health; CVI: Content validity index.

In the individual dimension (Table 2), the conditions considered influential were: being malnourished; being dehydrated; being obese; not following the diet recommended by professionals; adopting a diet rich in carbohydrates and sugars; adopting a high-sodium diet; making use of nicotine; drinking alcohol; being a carrier of other chronic diseases.

In the programmatic dimension (Table 3), the conditions considered influential were: absence of sewage system; difficult access to a health unit; not receiving humanized care; having up to one medical appointment per year; delay in getting a medical appointment; absence of educational actions to encourage physical activity in the health unit; absence of campaigns regarding the harmful effects of tobacco; absence of educational actions in health.

In the social dimension (Table 4), the conditions considered influential were: living in a home with poor hygiene; family income lower than one minimum wage; not participating in group activities (recreation) at the health unit.

Table 3 – Content validity index of the social determining conditions of health, related to the social determinants of health, classified as programmatic vulnerability. Curitiba, Paraná, Brazil, 2015

SDH	SDCH	CVI %
Water supply	Absence of piped water	79.5
Sanitary sewage	Absence of sewage system	80.9
Electric light	Absence of electric light	75.3
Basic health unit or family health	Difficult access to a health unit	92.9
Humanization	Not receiving humanized care	84.5
Availability of appointments with physicians/nurses	Having up to 1 medical appointment a year	85.2
	Having from 1 to 3 medical appointments a year	60.5
	Having more than 3 medical appointments a year	54.2
	Having up to 1 nursing appointment a year	79.5
	Having from 1 to 3 nursing appointments a year	61.2
	Having more than 3 nursing appointments a year	45.7
Availability of specialized service providers	Delay in getting a specialized consultation	90.1
Encouragement of physical activity	Absence of educational actions to encourage physical activity in the health unit	85.2
Availability of campaigns and measures adopted on the harmful effects of tobacco	Absence of campaigns regarding the harmful effects of tobacco	84.5
Existence of educational actions on health	Absence of educational actions in health	91.5

Caption: SDH: Social determinants of health; SDCH: Social determining conditions of health; CVI: Content validity index.

Table 4 – Content validity index of the social determining conditions of health, related to the social determinants of health, classified as social vulnerability. Curitiba, Paraná, Brazil, 2015

SDH	SDCH	CVI %
Education	Lack of school access	77.4
Differentials of risk exposure	Living in urban area	36.6
	Living in rural area	53.5
Insalubrious housing	Living in a dimly lit house	62.6
	Living in a house with the presence of humidity	67.6
	Living in a house with poor hygiene	85.9
Public transportation	Not having access to public transportation	62.6
Unemployment	Being unemployed	72.5
Informal work	Working under informal conditions	54.9
Work-related accidents	Use of uniform and/or inadequate personal protective equipment for the job	69.7
Rural labor	Working outdoors	65.4
Internet access	No internet access	24.6
Access to a cell phone	No access to a cell phone	26
Access to information and communication technologies	No access to landline	28.8
	Not listening to the radio	35.9
	Not reading newspapers or magazines	38.7
	Not watching television	38
Skin color	White	33.8
	Black	38.7
	Brown/mixed	28.1
	Indigenous	25.3
Sex	Female	34.5
	Male	37.3
Family income	Family income lower than one minimum wage	83.1
	Family income from 1 to 3 minimum wages	61.2
	Family income higher than 3 minimum wages	38
Schooling	Less than 4 years of schooling	78.1
	4 to 8 years of schooling	52.1
	More than 8 years of schooling	44.3
Solidarity relationships	No frequent contact with friends	52.8
Reliance relationships	No connection to family	71.1
Contact with friends and relatives	Living alone	64.7
Belonging to a religious group	Not attending religious institutions	35.2
Belonging to unions	Not belonging to social networks (conviviality groups)	45.7
Being in playgroup activities	Not participating in group activities (recreation) at the health unit	80.9

Caption: SDH: Social determinants of health; SDCH: Social determining conditions of health; CVI: Content validity index.

● DISCUSSION

A study⁽¹⁶⁾ that examined the nursing use of the concept of vulnerability points to the privilege offered to the individual dimension, with superficial discussion of social phenomena. It seems like this aspect has not been overcome by nurses working in primary health care, since the result of this research also focuses on conditions related to the individual and the biological, with little approach to social conditions.

For the experts consulted in this study, individual vulnerability is characterized primarily by nutritional conditions, especially high-carbohydrate diets and consequent obesity. It is noteworthy that all the conditions cited as influential by nurses are risk factors evidenced in the literature⁽¹⁷⁻²⁰⁾.

The results observed suggest that the biological conditions of the individual dimension are aspects addressed routinely in the evaluation of diabetic foot and are, therefore, important to the vulnerability establishment. However, in order to visualize social determinants, these conditions should not be considered in isolation, due to the risk of indicating routine interventions disconnected from the social reality of the individual with DM.

On the other hand, conditions evaluated as not influential are considered protective and promoters of individual health; among them, the number of meals, practice of physical activity and diets rich in fruits and vegetables.

A study showed that social determinants are directly related to glycemic control and the reduction of complications. Thus, the focus of the interventions related to DM should be expanded, considering the lifestyle and self-care actions taken, including those that are not yet internalized in the daily routine⁽²¹⁾.

Conditions that establish programmatic vulnerability were primarily related to the access to the health unit, to the specialized consultation and the general and specific educational activities. By linking the concept of vulnerability to aspects concerning the availability of resources for the protection of people, indicating access as a priority item may reflect a modification, surpassing interventions focused on service, directing them to individual's health needs⁽¹³⁾.

Including the lack of educational activities as a programmatic vulnerability condition is an important aspect, understanding them as promoters of self-care. A study⁽²²⁾ that identified the profile of diabetic participants of a health program revealed that 22% of the respondents received guidance related to the care of diabetic foot; of these, 54% claimed that the nurse was responsible for the instructions.

An article presenting an analysis of an educational intervention based on participatory communication in relation to foot care of patients with DM found that it brought benefits in relation to self-care, learning and the choice of more appropriate practices⁽²³⁾. Thus, nurses should build educational practices that go beyond prescriptive educational practices.

A study evaluating preventive care for diabetic foot in primary care concluded that strategies based on light and light-hard technologies should be used in systematic assessments of diabetic people. It also points out that the assessment aims to sensitize individuals to develop skills for self-care⁽²⁴⁾.

Only three social conditions were indicated as influential to the development of diabetic foot. In the literature, family income is reported as prevalent in the sociodemographic profile of patients with diabetic foot⁽²⁵⁾, and hygiene and housing conditions are reported as predictors of complications⁽²⁶⁻²⁷⁾.

Nonetheless, social conditions related to belonging to social or recreational groups, in the literature, seem to be associated with educational groups derivatives of actions planned for diabetic people, which involve risk identification⁽²⁷⁾.

During the nursing consultation and subsequent evaluation of the foot of a diabetic patient, nurses must overcome the focus on the risk. An integrative review of the human process of living and nursing from the perspective of vulnerability concluded that nurses must recognize different manifestations of vulnerabilities and reflect on inequalities to contribute to the strengthening of citizenship and quality of services⁽²⁸⁾.

It is alarming that conditions related to sex and ethnic inequalities and access to communication technologies have not been identified as influential to establish social vulnerability relating them to a chronic disease.

Studies point to the need of recognizing the importance of social determinants for the construction and organization of care strategies for coping with and controlling DM⁽²⁸⁻²⁹⁾. In light of the results presented by this study, it is suggested that this need is incorporated incipiently by primary care nurses.

Some limitations were identified in this study, among which the following stand out: absence of the second round for evaluating conditions with a CVI close to 80%; the possible influence of the organization of public services in the cities of origin of the participants; the profile of the professional expert, because the reality of the health system and the workplace reflect different health needs from users.

● CONCLUSION

This study allows to affirm that the SDCH related to the social dimension of vulnerability are still poorly recognized by nurses as able to influence the development of diabetic foot. Individual and programmatic vulnerabilities are the most relevant in the opinion of the surveyed nurses, which agrees with the literature review.

The evaluation of biological risks for DM is practiced, but has been insufficient to prevent aggravations of diabetic foot. According to the results of this study, it can be considered that the inclusion of the evaluation of the vulnerability dimensions associated with the risk assessment may be beneficial in the prevention of diabetic foot.

This study provides the identified SDCH and which may be related to the development of diabetic foot for further research.

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