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Mini Review

Nurses as educators of diabetic foot patients

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Abstract

The present article is a mini review on the multi-faceted role of the nurse in relation to the education of the patient with diabetic foot disease, a severe medical condition with worldwide prevalence and immense financial and clinical implications. We present a mini review based on scientific articles written in English concerning the role of the nurse in the areas of prevention, care and rehabilitation focusing on their contribution in educating the diabetic foot patients and their relatives to recognize the symptoms of diabetic foot, helping them follow simple and basic rules that will prevent the onset or further development of the disease, informing them as to the available treatment options during care and eventually supporting them in the road to lead a fulfilling life.

Keywords: Nurse, Diabetic foot education, Prevention, Care, Rehabilitation

Introduction

Diabetes mellitus (DM) is a disease that affects millions of people worldwide acquiring the form of a universal epidemic disorder. According to the World Health Organization, the number of diabetic patients has risen from 108 million in 1980 to 422 million in 2014[1], with "moderate" projections of diabetic foot patients reaching 366 million by 2030[2]. It is evident that this rapidly evolving problem requires the close collaboration of health care providers with patients and families in order to achieve the implementation of effective strategies that will alleviate the dire complications of the disease.

DM has several severe complications and the diabetic foot disease is considered among the most common as well as one of the most devastating. Diabetic foot disease is defined as a foot affected by ulceration that is the result of neuropathy or peripheral arterial disease of the lower limb in a patient suffering from diabetes[3]. Whereas diabetic foot ulceration in diabetic patients ranges between 4-10%, studies show that about 5% of all patients with diabetes will develop some form of foot ulceration[4], while the risk of developing foot ulceration among diabetic patients during their lifetime reaches 15%[4]. Moreover, 15-20% of all patients with foot ulcers will eventually need lower limb amputation[5]. If the patient with diabetic foot ulceration does not receive the necessary care, the infected ulcers can lead to severe infections, gangrene and even death[6].

Among the best preventive strategies in the battle against diabetes and its complications is the multidisciplinary team approach[7]. The specialists in these teams usually are general practitioners, nurses, orthotic consultants, podiatrists, vascular surgeons, infection disease specialists, endocrinologists, dermatologists, dieticians, psychologists/psychotherapists and orthopedic specialists[8,9]. Even though every team member has a very important functional role, the role of the nurse in the team is exceptional[9] because they are involved not only in the fields of care and rehabilitation after the onset of the disease, but also in the field of prevention. Given the fact that diabetic foot ulcerations are preventable[10,11] if the patient and/or his family receive proper education as to the symptoms and management of the disease, one can understand the different and important roles the nurse can assume as an educator, consultant, care provider and connector, researcher and supporter of the patient's rights[12].

Methods

For the purposes of this review searches were conducted in various online databases (Cochrane Library, Medline/

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PubMed, Google Scholar) and search was also conducted via other search engines. From the 93 articles, studies, and reviews collected which were published internationally between January 1995 and October 2018 in the English language, with the use of keywords: nurse, diabetic foot education, prevention, care and rehabilitation, 19 were selected, on the basis of relevance to the subject. Exclusion criteria were articles focusing on specific types of diabetes and specific types of diabetic patient groups. From the selected articles' bibliography, 7 articles were also included in the review.

Results

The nurse as educator in the prevention, care and rehabilitation of the diabetic foot patient

Prevention

The education of the patient and his/her environment plays an instrumental role in the prevention of the diabetic foot syndrome. Many diabetic patients may not know or may not be in a position to understand the importance of proper care of their feet. The first step for the nurse is therefore to assess the patient's self-care capacity and establish communication that will help with the next steps. This can be achieved either with the patient himself or members of his immediate environment, if the patient is in need of assistance and cannot perform the tasks alone either due to complications of the disease, e.g. poor eyesight, or due to other factors, e.g. age, chronic diseases.

Annual foot examination

According to the American Diabetes Association, all patients with diabetes require an annual foot screening[13] in order to identify high risk conditions of the foot such as foot deformities or callus formation as well as help with the management of problems with the feet. There is ample evidence to suggest that the annual foot examination helps in the reduction of foot ulceration as well as in the number of lower limb amputations, and the diabetic patients should be encouraged to make regular follow up visits.

Self-care inspection and hygiene

The diabetic patients should be educated as to how to properly inspect their feet in order to note any early sign of abnormality. The patients should be instructed to daily check both the plantar and the dorsal aspects of their feet, the heels and the areas between the toes. If not able, they could use a mirror to help inspect their feet or ask a member of their environment for help. Any swelling, change in the color or break in the skin of the feet as well as any wound that does not heal should be treated as a sign to seek medical advice[14].

Hygiene also plays a very important role. The patients should be encouraged to wash their feet daily and dry them thoroughly, particularly the area between the toes. The application of moisturising and non-irritant foot cream is very important since the nervous system that controls sweating is impaired and the cream keeps the feet moist. Care should be taken not to apply cream between the toes as this could lead to infections. The toenails should also be carefully trimmed after washing the feet in lukewarm water when they are softer and in a straight line to prevent cuts in the skin of the toes, and the patient should be advised to always wear clean and dry socks.

Appropriate footwear

The choice of correct footwear is key for the low risk diabetic patient. The risk of permanent foot damage due to the wrong size or style, e.g. pointy shoes, is very high and can lead to feet deformity, calluses and eventually ulcer formation due to the fact that the diabetic patient suffers from sensory loss and may not feel the injury until it is too late[15]. More than 55% of foot ulcers are caused by pressure caused by poor footwear[16]. The high risk diabetic patient should opt for orthopedic footwear with sufficient toe space to accommodate minor deformities, broad base for better support and traction as well as foam padding for cushioning[17].

Lifestyle changes

The diabetic patient should also be educated in respect to lifestyle changes that are crucial in the prevention and management of the diabetic foot syndrome[18].

Physical exercise

Undertaking physical exercise in order to achieve weight management is very important to the diabetic patient, since a very high percentage of diabetics are overweight. Moderate daily exercise of less than 30 minutes improves the insulin sensitivity and lowers the blood pressure[19].

Smoking

Smoking is not only a well documented health risk in connection with lung cancer but also a factor for peripheral vascular disease, and as a result a leading cause for the development of ulcers[20].

Glucose control

Regular screening of hyperglycemia is vital for the prevention of neuropathy, one of the main causes of diabetic foot syndrome. Hyperglycemia can affect the immune system causing delay in the healing of wounds[21]. Studies have shown that glucose control could help reduce nerve damage by 60% as well as several other vascular complications[22].

Lipid and blood pressure control

According to the American Diabetes Association, there is a reduced risk of vascular complications through lipid and blood pressure control[23]. A nurse can explain these facts in simple terms making suggestions for screening and dietary choices involving low cholesterol foods.

Treatment

Another aspect of the role of the nurse in the education of the diabetic foot patient is in the area of treatment, after the onset of the diabetic foot syndrome. All the points noted in the area of prevention also apply in the area of treatment and care in order to prevent the deterioration of the ulcers.

Wound dressing

The nurses should have adequate knowledge on the different types of ulcers, such as neuropathic, ischemic or neuroischemic ulcers as well as the appropriate dressings required according to the features of each type[24]. Wound dressing is very important as it keeps the wound clean and retains the appropriate wound moisture, helping in the debridement and containing the bacterial infections[25].

Rehabilitation

The role of the nurse in the area of rehabilitation is also crucial, especially to the patient with severe ulceration or amputated lower limb. A nurse is the health provider closest to the demoralized patient and can provide him/her with the emotional support needed for the reclaim of their self esteem and the encouragement to acquire once again a good quality of life. At this point, the diabetic foot patient should be motivated to improve their leg function with the use of simple exercises that improve blood circulation[26], or attend physical therapy sessions[27].

Last but not least the nurse should be able to inform the patient and their environment on the devices that will help them retain and/or improve their mobility[28] which helps with their autonomy and thus improves their psychology.

Discussion

Diabetes is one of the major burdens of the health systems worldwide, and the diabetic foot disease is considered one of the most devastating complications of diabetes even though it is preventable if the patient receives the proper education. Nurses play a vital educational role in the stages of prevention, management and rehabilitation since they are the health providers who interact the most with the patient. The education they provide on the basics of foot care, on the inspection of the feet, on hygiene, on proper footwear, on glucose and cholesterol tests, on lifestyle choices and the importance of follow up tests are crucial factors that can prevent the onset or the development of the disease. Moreover, their role in teaching the patient to manage the diabetic foot with the appropriate dressings, exercises or assistive devices minimizes the risk of recurrence of the disease and improves their mobility.

The aim of nursing, i.e. the provision of tailored patient care according to the needs of the patient, is achieved through education, consultation and research and can lead to significant physical, mental, emotional and psychological improvement of the patients, helping them lead a fulfilling life because above all, the role of the nurse is humanitarian.

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