



## Keywords

Education,  
Diabetes Mellitus,  
Foot Care,  
Patients,  
Diabetes Complications

Received: March 24, 2017

Accepted: May 18, 2017

Published: August 21, 2017

# Foot Care Education for Diabetes Mellitus Patients

Alexandra Dimitriadou, Maria Lavdaniti\*

Nursing Department, Alexander Technological Educational Institute, Thessaloniki, Greece

## Email address

[maria\\_lavdaniti@yahoo.gr](mailto:maria_lavdaniti@yahoo.gr) (M. Lavdaniti)

\*Corresponding author

## Citation

Alexandra Dimitriadou, Maria Lavdaniti. Foot Care Education for Diabetes Mellitus Patients. *Journal of Nursing Science*. Vol. 3, No. 1, 2017, pp. 1-4.

## Abstract

Diabetes mellitus represents a major health problem and is related to many complications. One of them is diabetic foot, which is very common and believed to be the main cause of motor problems. Diabetes education has been recognized as an integral part of diabetes treatment and diabetes management. The purpose of this paper was to review literature about education and diabetic foot care. A literature review was conducted using the electronic databases PubMed and Google scholar. The following key words were entered: "education", "care", "diabetic foot" and a combination thereof. Exclusion criteria of articles were the language, except English. Diabetes education is performed by a team which plays a key role in the education of patients and in identifying high-risk patients. Patient's education focused mainly on recognition of the diabetic foot, daily self-care, washing feet, trimming toenails, proper footwear, modification of the way of living and following the instructions of the diabetes team. There is insufficient evidence that patient education alone is effective in achieving clinically relevant reductions in ulcer and amputation incidence. There is a great need for further research in order to clarify the necessity of education in diabetic foot care is great.

## 1. Introduction

Diabetes mellitus is a chronic disease, caused by the body's inability to produce insulin, or by the ineffective use of the insulin produced [1]. It represents a major health problem and is related to many complications [2]. One of them is diabetic foot, which is very common and is believed to be the main cause of motor problems. Lower limb amputation is 10-30 times more frequently in diabetic patients than in the general population. It is estimated to affect 15% of patients with diabetes. Foot complications are one of the main causes of amputation, and they cause major physical and emotional problems [3].

According to the World Health Organization and to the International Working Group on the Diabetic Foot, diabetic foot is defined "as the foot of diabetic patients with ulceration, infection and/or destruction of the deep tissues, associated with neurological abnormalities and various degrees of peripheral vascular disease in the lower limb"[4]. Early recognition of the diabetic foot and early management thereof can reduce the incidence of diabetic ulcers in 44 -85% of all cases. Regular and proper education in foot care can reduce the likelihood of amputation [5]. Diabetic people with foot ulceration experienced reduced quality of life because of pain, restricted mobility, time lost from work and reduction in social activities [6].

Diabetes education has been recognized as an integral part of diabetes treatment and

diabetes management [5]. Educational programmes are effective and beneficial when education is delivered according (the line should be removed) to individual needs [7].

The purpose of the present study was to review literature about education and diabetic foot care.

## 2. Method

A literature review was conducted using the electronic databases PubMed and Google scholar. The following key words were entered: “education”, “care”, “diabetic foot” and a combination thereof. Exclusion criteria of articles were the language, except English.

## 3. Education in Diabetes Patients

There can be no doubt that diabetes education is an essential aspect of diabetes management [5]. One of the goals of Healthy People 2020 is to increase the proportion of diabetes patients receiving formal diabetes education from 56.8 to 62.5% [8]. The importance of foot care education is stressed by the International Working Group on the Diabetic Foot and by the International Diabetes Federation. Moreover, this is also true of the SEMSDA guidelines on the Diagnosis and Management of type 2 diabetes mellitus for primary health care [7].

Self-management education is extremely important because patients and their families provide a high percentage of care-giving [5]. One of the main aims of education is to change behavior and promote self management because it was reported that poor foot care is associated with high-risk ulcerations, amputations and mortality [5]. The goal of the management of the diabetic foot focused on avoiding lower extremity amputation. Identification of the “at-risk” foot, prompt and effective treatment of the acutely diseased foot, and prevention of further problems are strategies to achieve this goal. Great emphasis is placed on the prevention and on foot care education despite the fact that the results of the studies are controversial [6].

Education for diabetic patients includes: self-care practices, learning good daily hygiene of the lower limbs, early recognition of suspicious signs and symptoms and develop self-control skills [3]. The implementation of these results in preventing and minimizing the possibility of injury or foot ulcers. According to Stuart & Wiles education is defined as “a tool with which to empower people with the confidence to manage their own diabetes.” [9]

Diabetes education is performed by a team playing a key role in the education of patients and in identifying high-risk individuals. This team consists of a diabetologist, an orthopedic surgeon, a chiropodist and a nurse specialized in

foot care. All health care professionals belonging to this team should be able to perform a neurological, dermatological, vascular and musculoskeletal systems clinical examination.

The role of the education team is to teach patients about simple foot examinations and to encourage them to implement simple rules, to design individualized training programs and to take into account the patients’ and their families’ needs. Also, the educational team will look to improve the participation of patients and their families in the educational program. The main objective of the team is to increase patients’ knowledge about the development of the diabetic ulcer and increase the skills necessary to carry out a successful examination of their feet [10].

## 4. Educational Groups of Patients

Diabetes patients participating in this type of educational intervention program are divided into three categories accordingly to their age, their physical status and mental state [3, 11].

There are three categories of patients. The first category includes patients who are in good physical and mental condition and have no risk factor. The second category includes patients diagnosed with kidney vasculitis and vascular disease, who have not had foot problems and can still continue their normal activities. The third category comprises patients in poor physical condition, who have problems in the lower limbs, as well as those who rely on the assistance of a care-giver.

There is a need to devote attention to patients who

- a) have no symptoms, thus making it difficult to understand the illness and adopt appropriate behavior,
- b) were recently diagnosed, do not take advantage of public health services and are reluctant to adopt the lifestyle changes,
- c) were previously diagnosed, but who feel healthy and do not believe that ulceration is possible in their case,
- d) Children or young adults, who have an active lifestyle and are loathe to accept restrictions and prohibitions [3].

According to van Rensburg (2009), “a person with diabetes should receive education that corresponds to their individual level of risk”. Also, it is referred that risk stratification should be carried out before patients receive foot care education [7]. The American Diabetes Association (2004) [12] recommends that patients with high-risk foot conditions should be educated regarding their risk factors and management. Also, it has been established that all health care professionals should be able to conduct a simple neurological, dermatological, vascular and musculoskeletal systems check.

In table 1, the following risk stratification is shown:

Table 1. Risk Stratification.

Category	Risk Profile	Follow-up Frequency	Targeted Education
0	Sensation intact	Once per year	No lifestyle changes, basic care, disease process
1	Diminished sensation. Blood supply intact, no foot deformities	Every six months	Intensive education to promote practical self-care skills, routine podiatry care
2	Diminished sensation, blood supply compromised or foot deformities	Every three months	Intensive practical education that emphasizes strategies to modify behavior and lifestyle. Assess knowledge and understanding
3	Previous ulceration or amputation	Every one to three months	As above

## 5. Foot Care Education

Foot care is very important in diabetes patients, especially for those experiencing numbness, tingling in foot, changes in the shape of the foot shape, as well as foot sores, cuts or ulcers. The diabetes team should give the following guidelines to patients.

- a) Check feet every day
- b) Wash feet every day
- c) Keep the skin soft and smooth
- d) Smooth corns and calluses gently
- e) If patient can see, reach & feel feet, and trim toenails regularly
- f) Wear shoes and sock at all times
- g) Protect feet from hot and cold
- h) Keep the blood flowing in the feet
- i) Be more active
- j) Patients should make sure to ask their health care team to check feet at every visit, check the sense of feeling and pulses in the feet [13].

The method of education is based on either team or individual work. In team education, participants have common interests, common needs and questions, so that they interact with each other. In individual education, health professionals can design a personalized care plan for each diabetic patient and inform patients about the goals to be achieved, as well as convey the knowledge and skills necessary for self-management [3]. Traditional teaching methods include oral and written material, and recently many web sites provide general information about diabetes, its treatment and knowledge / skills with respect to self-management [14].

Although there are many preventive interventions in daily practice, there is little evidence to demonstrate the effect of these interventions. Thus far, detailed systematic reviews have failed to provide enough proof of the assumption that patient awareness through education leads to significantly fewer cases of ulceration and amputation. Nor has it been shown that more sophisticated approaches, including patient education, can counteract foot ulceration in diabetes patients. It is noteworthy to mention that prevention programmes should include patient education and other multiple combined interventions. [15].

## 6. Conclusions

Diabetes patients should receive foot care education as soon as they are diagnosed. Nurses and other health care

professionals need to listen to the specific needs of each individual patient and teach them appropriate skills, thus helping them to adopt lifestyle changes. It is noteworthy to mention that all providers of foot care should participate in ongoing education development programmes to obtain skills to assist diabetic people in changing their behavior in a positive way. Furthermore, nurses should encourage patients to receive diabetic foot care education in primary care settings and on a one-to-one basis, where necessary.

## References

- [1] World Health Organization (2015). Diabetes. Available at: <http://www.who.int>, access on 6/3/2015.
- [2] van Netten, J. J., Price, P. E., Lavery, L. A., Monteiro-Soares, M., Rasmussen, A., Jubiz, Y., Bus, S. A; International Working Group on the Diabetic Foot. Prevention of foot ulcers in the at-risk patient with diabetes: a systematic review. *Diabetes Metabolism Research and Reviews*. 2016; 32 Suppl 1:84-98. doi: 10.1002/dmrr.2701.
- [3] Polikandrioti, M., Kalogianni, A. Education on foot care in people with diabetes mellitus, type II. *Rostrum of Asclepius* 2009; 8:107-118.
- [4] Schaper, N. C., Van, Netten, J. J., Apelqvist, J., Lipsky, B. A., Bakker, K; International Working Group on the Diabetic Foot. Prevention and management of foot problems in diabetes: a Summary Guidance for Daily Practice 2015, based on the IWGDF Guidance Documents. *Diabetes Metabolism Research and Reviews*. 2016; 32 Suppl 1:7-15. doi: 10.1002/dmrr.2695.
- [5] Formosa, C., Gatt, A., Chockalingam, N. The importance of diabetes foot care education in a primary care setting. *J Diabetes Nursing* 2012; 16(10): 410-414.
- [6] Vatankhah, N., Khamseh, M. E., Noudeh, Y. J., Aghili, R., Baradaran, H. R., Haeri, N. S. The effectiveness of foot care education on people with type 2 diabetes in Tehran, Iran. *Prim Care Diabetes* 2009; 3(2): 73-7. doi: 10.1016/j.pcd.2009.05.003. Epub 2009 Jun 12.
- [7] Van Rensburg J. G. (2009). Preventive foot care in people with diabetes: Quality patient education. *JEMDSA* 2009; 14(2), suppl 1: 1-2.
- [8] Centers for Disease Control and Prevention (2010). Healthy people 2010 final review. CDC, GA, USA. Available at: <http://1.usa.gov>, accessed 6-3-2015.
- [9] Stuart, L., Wiles, P. The role of patient education in preventing foot ulcers: the elusive Pimpernel? *Evidence Based Health care & Public Health* 2005; 9, 359–360.
- [10] Aalaa, M., Malazy, O. T., Sanjari, M., Peimani, M., Mohajeri-Tehrani, M. Nurses' role in diabetic foot prevention and care; a review. *J Diabetes Metab Disord* 2012;11(1):24.

- [11] Schoen, D. E., Gausia, K., Glance, D. G., Thompson, S. C. Improving rural and remote practitioners' knowledge of the diabetic foot: findings from an educational intervention. *Journal of Foot and Ankle Research*. 2016 29;9:26. doi: 10.1186/s13047-016-0157-2. eCollection 2016.
- [12] American Diabetes Association. Preventive foot care in Diabetes. *Diabetes Care* 2004; 27: S63-S64.
- [13] National Diabetes Education Program. Take care of your feet for a lifetime, 2014.
- [14] Essien, O., Otu A., Umoh, V., Enang, O., Hicks, J. P., Walley, J. Intensive Patient Education Improves Glycaemic Control in Diabetes Compared to Conventional Education: A Randomised Controlled Trial in a Nigerian Tertiary Care Hospital. *PLoS One*. 2017 3; 12(1):e0168835. doi: 10.1371/journal.pone.0168835. eCollection 2017.
- [15] Dorresteijn, J. A.; Valk, G. D. Patient education for preventing diabetic foot ulceration. *Diabetes Metabolism Research and Reviews*, 2012; 28 (suppl 1): 101-6.