Nat. Volatiles & Essent. Oils, 2022; 9(2): 353-371

NVEO
Natural Volatiles &
Essential Oils

Prevention Of Diabetic Foot Problems: A Review Based Study

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Abstract

Diabetes mellitus can be considered as a long-lasting disease that can consist of multiple complications that can affect the entire body system including foot problems. Diabetes foot ulcers are a prevalent disease. Knowledge and practice are two of the most important factors affecting the quality of diabetes care. The present study aims to know diabetes patients' knowledge and experience concerning foot problem prevention and care. The current review-based study aimed to identify the problems and prevention of diabetic foot problems. The present study involves the data from secondary resources such as published and unpublished articles, research studies, websites, information from books, etc. The findings of the previous literature demonstrated that knowledge and awareness of the problem and a healthy lifestyle play an eminent role in diminishing and exacerbating the disease. Furthermore, results revealed that those individuals who were educated and motivated regarding the knowledge and practices regarding their foot ulcers showed better improvement in their health. Furthermore, lower levels of education and motivation can lead to poor health or a lack of improvement in health. Future studies should highlight other prominent causes of the ulcers.

Keywords: Diabetic foot problems, foot ulcer, prevention, problems, and causes.

Introduction

Diabetes mellitus is a type of diabetic complication that is categorized by high blood sugar. It can run from family to family or from generation to generation. Diabetes-II is considered a long-lasting disease such that no proper cure has been determined for such disease. It has multiple complications that can affect the entire system of the human body (Lin et al., 2020; Yazdanpanah et al., 2018). It has been noted that in 2013; more than 1.3 million cases of diabetes deaths occurred while disability life adjusted 56 million. Diabetes-related disabilities rate rose from 589.9 per 100,000 people in 1990 to 883.5 per 100,000 people in 2013. Overall diabetes-related DALYs were enhanced by 148.6% between 1990 as well as 2013; the birth rate was taken into account for 62 % of cases, while aging and a raise in time of life Annual incidence

percentages compensated for 31.8 and 53.9 percent, respectively (Sharma, 2021; Tyrovolas et al., 2020; Tripathy, 2018).

According to Jackson et al., 79.5 percent of diabetic patients in Nigeria could have more than 70% extensive understanding of consciousness (Hailu et al., 2019; Lael-Monfared et al., 2019). According to the findings of a Malaysian research, the majority of patients (58%) had poor knowledge and 61.8 percent practiced poor foot care (Muhammad-Lutfi et al., 2014). Foot ulcers are thought to be the most preventable diabetes complication. Good diabetic foot care practices reduce the risk of diabetic foot complications and, ultimately, amputation (Haq et al., 2017; Karaoui et al., 2018; Tripathy, 2018). Annual assessments of knowledge, skills, and behaviors are required for diabetic patients, according to the American Diabetes Association (Benkobbi et al., 2019; Osuji et al., 2019; Pourkazemi et al., 2020). Diabetes was responsible for 1.3 million deaths (2.4 percent of all deaths).

Diabetes mellitus can affect almost every part of the human body, but the most common are foot disorders. Foot ulcers are the main risk factor, mutilation, impaired mobility, disruption of human participation, and impaired quality of life in diabetics. In the current study, the secondary data was gathered from previous literature. The current study would be helpful in improving the time, strategies, and management plans. It will be fruitful in the long run and in this way reflective models prove to be a game changer. By taking the opinion of the clients it would help us to devise a plan that would be beneficial for them in both financial and psychological treatment (Biswas 2015; Jeyaraman et al., 2019; Mann et al., 2009). As a result, both in the society and in health care facilities, health care workers must be instructed in foot ulcer preventative measures solely on medical practice standards for diabetes mellitus.

Literature Review

The prevalence rate of diabetes has varied among different countries in EMR. Furthermore, it has been noted that the rate of prevalence in Saudi Arabia is reported around 13 % whose age varies from 15 years or above (Al-Anazi et al., 2022; Balasubramanian et al., 2018; Zaidi et al., 2019), and 12.1 percent for the male population and 9.8 percent for females aged between 25 in Pakistan. Meta-analysis of the risk of developing type 2 Mellitus in Iran revealed a wide variety of 3 to 20% in different regions (Benkobbi et al., 2019;Khateri et al., 2019; Najafipour, 2018). Foot ulcers are thought to be the most preventable diabetes complication. Good diabetic foot care practices reduce the risk of diabetic foot complications and, ultimately, amputation (Haq et al., 2017; Karaoui et al., 2018; Siersma et al., 2015).

Annual assessments of knowledge, skills, and behaviors are required for diabetic patients, according to the American Diabetes Association (Osuji et al., 2019; Pourkazemi et al., 2020). Diabetes was responsible for 1.3 million deaths (2.4 percent of all deaths). As it has been mentioned in previous literature, such as those individuals who were educated and motivated regarding the knowledge and practices regarding their foot ulcers, they showed better improvement in their health. Only precautions and knowledge can improve health. It has been noted that people who are at risk or diabetic patients are more vulnerable and at risk of foot diseases (Paisey et al., 2018; Shatnawi et al., 2018)**.** Mellitus chronic wounds account for 12–15 percent of the overall projected price of diabetes in advanced countries, rising to 40% in developing nations (Lima et al., 2022; Pourkazemi et al., 2020)**.** Most common or affected

complications by diabetes included a prevalence rate of 4 -10 % among the affected populations (Olowo et al., 2022; Ntuli, & Letswalo, 2021).

It has been noted that the prevalence rate of diabetes can be more common in the United States as compared to the European country where it has been seen at only 2 to 2.2 % (Jani et al., 2021; Orji, 2020). Treatment methods for foot ulcers can be difficult and expensive as they can be prevented by awareness and using precautions because they can reduce the symptoms (Olowo et al., 2022; Ntuli, & Letswalo, 2021). Diabetic foot problems and ulcers can affect the quality of life of diabetic patients in the sense of amputation. Furthermore; amputation can be prevented by strategies related to education and care (Batista et al., 2020; Djelaoudji et al., 2019;Verma et al., 2021). The literature revealed that about 25 % of diabetic patients enhance foot ulcers in their life and their treatment cost will be twice as compared to other severe diseases **(**Abbott, 2018; Backhouse et al., 2018; Hurlow et al., 2018; Pourkazemi et al., 2020).

The center provides diabetes patients with quality care, skills training, treatment, and other assistance. The center also provides treatment services but instead inpatient healthcare services, as well as routine training. Guilan University of Medical Sciences' Deputy of Research approved the research project. The subjects voluntarily enrolled in the experiment, and they were briefed on their privilege to withdraw at any point. The confidentiality of the participants was treated with respect, and information was kept private and used only for research purposes. An informed consent form was read and signed by all participants (Balo et al., 2020; Kaya, & Karaca, 2018; Zenner et al., 2020).

Using paper-based and digital records archives, a structured fact sheet has been used to gather demographic and medical data from patients. A medical student also conducted facial expression conversations to obtain intelligence. Outpatients and inpatients were both given a paper-based questionnaire. The Wagner diabetic foot problems classification system has been used to categorize the clients depending on the existence of ulcers. used nylon testing, optometrist or ophthalmologist reports, and the medical assessment demonstrated by the physician or, if available, pictures chosen to take via arterial Doppler or angiography to assess nerve damage, as well as deep vein thrombosis (PVD) in this hospital (Armstrong et al., 2017; Fu et al., 2019; Jeyaraman et al., 2019; Zhan, 2019). Having one or two more complications was considered a positive condition in the current study. The sample size was determined by taking the 95 percent confidence interval with d = 0.05 and P = 0.58 into account (Edmonds et al., 2015; Leuckert et al., 2019).

Due to diabetes the patients suffered different types of symptoms such as chronic or severe pain, ulcers, motor neuron imbalance (up and down), and cardiac problems (Rahman et al., 2022; Shourabi et al., 2020). So, it is eventually a tiring experience to fight the diabetes. According to the available statistics, a large group of individuals suffers a lot and in the end, they encounter death due to their chronic diabetes (Arora et al., 2018; Dewanjee et al., 2018; Khunti et al., 2019; Holmes et al., 2021; Muhammad-Lutfi et al., 2014; Subhani et al., 2015).

Foot problems that are caused by diabetes have an unpleasant effect on the life of diabetic patients (Botelho Filho et al., 2020; Pollock et al., 2019; Pourkazemi et al., 2020; Tharu, 2022). Disruptions in referring to major foot issues are especially concerning. According to Ndosi et al., 15.1 percent of

patients died within a year of the demonstration, and 45.5 percent of ulcers were completely cured but reverted in the case group (9.6 percent). People who participated with a single ulcer on their indicator foot healed more frequently than those who have numerous ulcers (hazard ratio 1.90, 95 percent CI 1.18 to 3.06) (Chang, & Nguyen, 2021; Ndosi et al., 2018; Pickwell et al., 2015).

Relevance

The aim of the current review based article is to investigate the common diabetic foot problems and their prevention. Furthermore, the treatment used for treating diabetic foot problems is helpful in the management of the problems faced by patients. The available literature demonstrated that there were a lot of studies that investigated the diabetic foot ulcer problems, and other diseases related to podiatry (Berhane et al., 2019;Ntuli, & Letswalo, 2021; Paisey et al., 2018; Shatnawi et al., 2018).

The current study was designed to investigate the practical and research based findings regarding the diabetic foot problems including ulcers, amputation, and many other problems. According to the findings of the previous literature, it is concluded that the practice of hygienic actions and having knowledge of prevention would eventually decrease the risk of problems. Similarly, another study revealed that the practice of a good and healthy lifestyle improves the quality of health care (Almadi et al., 2020; Ndosi et al., 2018; Pickwell et al., 2015; Shafee et al., 2022).

Purpose of the Study

The current study aimed at assessing patients' diabetic foot care knowledge and practice. The current study, aimed to analyze the degree of practice regarding foot care in patients with type 2 diabetes mellitus. A healthcare system can prevent diabetic foot ulcer and amputation by implementing a patient-education strategy. Recognizing the amount of expertise and practice in people with diabetes is critical in trying to plan for greater diabetes prevention and consequences (Zaraihah et al., 2014). According to a survey conducted by Ahmad and Ahmad on 124 people with diabetes in North India, 60 and 79 percent had poorer performance in diabetes knowledge and practice, respectively (Ahmad et al., 2015; Anuar-Ramdhanet al., 2014; Wong et al., 2020).

According to Jackson et al., 79.5 percent of diabetic patients in Nigeria could have more than 70% extensive understanding of consciousness (Hailu et al., 2019; Lael-Monfared et al., 2019; Sami, 2019). According to the findings of a Malaysian research, the majority of patients (58%) had poor knowledge and 61.8 percent practiced poor foot care (Al-Rubeaan et al., 2015; Muhammad-Lutfi et al., 2014). Foot ulcers are thought to be the most preventable diabetes complication. Good diabetic foot care practices reduce the risk of diabetic foot complications and, ultimately, amputation (Ding et al., 2019; Ferns et al., 2019; Haq et al., 2017; Karaoui et al., 2018; Sun et al., 2020). Annual assessments of knowledge, skills, and behaviors are required for diabetic patients, according to the American Diabetes Association (Gundgaard et al., 2019; Osuji et al., 2019; Pourkazemi et al., 2020; See, 2018). Diabetes was responsible for 1.3 million deaths (2.4 percent of all deaths). Incidences of diabetes vary from country to country in the Eastern Mediterranean Region (EMR) (Sousa et al., 2020; Nazari et al., 2018).

Objectives

Clinical review-based articles seems to have a plethora of prospective advantages and benefits. It also aids in the treatment and management of illnesses in a much more effective way. The main aim of the current study are as follows

- To explore whether requirements are being met and scientific research is being used in practice.
- To determine the guideline advancement standard.
- To assess the program's cost, reliability, and efficiency.
- To identify issues and resolve the resolution of those problems.
- To improve group interaction and cooperation.

Method

The current review-based article includes the secondary data. The secondary data was gathered by using previous literature from the resources available on Science Direct, PUBMED, MEDLINE, and Google Scholar. The findings were formulated on the basis of available literature. In order to fulfill the basic inclusion criteria, relevant literature was taken from journal articles, surveys, and websites. Furthermore, the studies should include at least foot related problems and diabetic patients as well.

Inclusion Criteria.

The included studies in this review based article had to meet the following criteria:

1. The data was collected from relevant articles including diabetic patients and having foot related problems
2. Regardless of diabetes type, all patients who were diagnosed with Diabetic foot problems.
3. All patients included in the studies were diagnosed with diabetic foot problems, regardless of whether they had a history of amputation or ulcers.

Exclusion Criteria

The following participants excluded from the review based article that met the given exclusion criteria:

1. The studies that were not examining the foot related problems
2. Diabetic patients were not the sample

Discussion

In the present study, the most diabetes patients had lower educational attainment. It has been reported by many studies such as; knowledge level depends upon the education level (Ahmad et al., 2015; Cohn et al., 2019; El-Khedr, & Lamadah, 2014; Thomassin et al., 2019). Understanding this variable is critical in developing diabetes prevention strategies. Diabetes mellitus can be transmitted from generation to generation and it is long lasting disease that can affect the whole system of humans. In the present study, the majority of the patients had lower levels of education and experience regarding foot care (Nath et al., 2021). The current audit would be helpful in improving the time, strategies, and management plans. It will be fruitful in the long run and in this way reflective models prove to be a game changer. Furthermore, it has been noted that the score for the practice was lowered as compared to the knowledge or information

and these findings were similar to the other findings such as Muhammad Lutfi and Kim's (Muhammad-Lutfi et al., 2014; Awwad, & Abu-khader, 2022; Hassan et al., 2021; Weller et al., 2020).

A study on diabetes patients in Western Nepal revealed a low KAP (expertise, mindset, and practices) score. They suggested that credible variables could include the researched population's lack of awareness, insufficient information, and education levels (Gautam et al., 2015). The current study holds significant results such as; that can provides pieces of knowledge, awareness, and precautions related to the foot disorders. Another research on young Saudi females to hyperglycemia found that their KAP scores were also low (Awwad, & Abu-khader, 2022; El-Khedr, & Lamadah, 2014; Jeyaraman et al., 2019).

The current study didn't meet the standard criteria due to the distinctions in awareness about foot care among people with diabetes throughout studies might be attributed to various diabetes management training sessions availability of healthcare professionals from different environments. The finding of the current study holds significant findings that match (Abbasi et al., 2018; Ansari et al., 2019), as well as literacy level. Because the nature of the study populations and the measurement systems used were distinct, it was impossible to match the existing findings and conclusions to that of other research. Diabetes was responsible for 1.3 million deaths (2.4 percent of all deaths). It has been noted that people who are at risk or diabetic patients are more vulnerable and at risk of foot diseases (Paisey et al., 2018; Shatnawi et al., 2018)**.** Mellitus chronic wounds account for 12–15 percent of the overall projected price of diabetes in advanced countries, rising to 40% in developing nations (Lima et al., 2022; Ming et al., 2019; Pourkazemi et al., 2020)**.** The distinctions in awareness about foot care among people with diabetes throughout studies could be attributed to different diabetes management training session's availability of healthcare employees in various settings (Ndosi et al., 2018; Pickwell et al., 2015; Pierre Jr et al., 2019), as well as the literacy level of the subjects studied.

Individuals with a strong level of literacy are more likely to interpret and obtain messages about their illness and foot care, as well as interpret the material performed by health personnel in health care settings. The present study holds significant findings such as gender, disease duration, profession, location of residence, standard of knowledge, having diabetic foot problems, and a background of hospitalization, mutilation, and complexity all had close associations with expertise.

Several studies have found that diabetic patients have poor foot care practices ((Ntuli, & Letswalo, 2021; Maunoury et al., 2021; Paisey et al., 2018). Patients in Qatar reported poor practices regarding proper foot investigation (Elkashif et al., 2021; v Mahdy, 2021; Osuji et al., 2019; Pourkazemi et al., 2020). Malaysian researchers discovered that 28.4 percent of recently diagnosed people who have diabetes practiced foot function (Chang, & Nguyen, 2021; Walter, 2019). According to the findings, the majority of patients had poor knowledge and 61.8 percent practiced poor foot care (Muhammad-Lutfi et al., 2014). Foot ulcers are thought to be the most preventable diabetes complication. Good diabetic foot care practices reduce the risk of diabetic foot complications and, ultimately, amputation (Karaoui et al., 2018; Paisey et al., 2018). Annual assessments of knowledge, skills, and behaviors are required for diabetic patients, according to the American Diabetes Association (Osuji et al., 2019; Pourkazemi et al., 2020). Another research study conducted in Nigeria discovered that it only 10.2 percent of people with

diabetes seemed to have proper foot care practices (Ahmad et al., 2015). According to some studies, diabetic patients have a high level of glycemic control (Hurlow et al., 2018). It should always be mentioned that, especially in the wet climates in northern Iran, the use of lotion between the toes is uncommon.

The common strategies that was used to treat the ulcer or diabetic foot problems such as preventing infection from further spreading in the foot or other parts of the body. Secondly, another technique used is to reduce the pressure to stop the blood leakage or compression of the ulcer. Thirdly by removing the damaged skin tissues to stop the spread of infection (known as debridement) (Ahmad et al., 2015; Harrington et al., 2018; Hicks et al., 2020). By providing medications and proper dressing of the ulcer was also proved an effective treatment for treating the diabetic foot problems. Most importantly, by reducing the blood glucose level to its normal (Jeyaraman et al., 2019; Lakmal et al., 2021; Séchaud et al., 2020).

So, the body can respond in a positive manner to deal with the other health problems as well. Treatment methods for foot ulcers can be difficult and expensive as they can be prevented by awareness and using precautions because they can reduce the symptoms (Ahmad et al., 2015; Allison, & Flanagin, 2020; Olowo et al., 2022; Ntuli, & Letswalo, 2021; Probst et al., 2020). Diabetic foot problems and ulcers can affect the quality of life of diabetic patients in the sense of amputation. Furthermore; amputation can be prevented by strategies related to education and care (Batista et al., 2020; Sarmiento et al., 2019; Selvarajah et al., 2019; Verma et al., 2021). In order to cater the problem more sophistically the practical steps should be taken to avoid any major suffering such as amputation, etc. Conclusively, the more research work is needed in the future in order to improve the treatment strategies and effectiveness of the treatment.

Conclusion.

Diabetes mellitus is a type of diabetic complication that is categorized by high blood sugar. It can run from family to family or from generation to generation. Diabetes-II is considered a long-lasting disease such that no proper cure has been determined for such disease. It has multiple complications that can affect the entire system of the human body.

Foot ulcers are thought to be the most preventable diabetes complication. Good diabetic foot care practices can reduce the risk of diabetic foot complications and, ultimately, amputation. Nonetheless, these can vary from person to person because some individuals are motivated and educated while others are not. So those individuals who were motivated were less vulnerable to such a long lasting disease. Strategies used in the study were also effective for participants who were motivated while to some extent it was not effective due to the illiteracy of participants. Treatment methods for foot ulcers can be difficult and expensive as they can be prevented by awareness and using precautions because they can reduce the symptoms. Diabetic foot problems and ulcers can affect the quality of life of diabetic patients in the sense of amputation. Furthermore; amputation can be prevented by strategies related to education and care. The current study can be helpful in producing and improving the good quality work and services as well. The benefits of the current study includes it provide way to look back on the lacking and missing areas in any institution.

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