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THE IMPORTANCE OF DIABETIC FOOT MANAGEMENT

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Diabetes mellitus in tropical region

Diabetes mellitus prevalence and its associated complications have become increasingly common and growing rapidly throughout most the Asian countries.

The diabetes prevalence in 2003 was high in Singapore (12.3%), Brunei (10.7%), Malaysia (9.4%) and Hong Kong (8.8%) with estimated increment from 3 to 7% by 2025.

Malaysia, being situated at the equator line, experiences hot and humid weather throughout the whole year. Some countries (e.g. Malaysia, Singapore, Brunei and Hong Kong) show higher increment of diabetes mellitus prevalence as economic development and urbanisation (due to natural population growth, expansion of urban areas and rural to urban migration) lead to changing lifestyles with reduced physical activity and increased obesity in the whole population (Cockram, 2000).

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In many Asian countries (e.g. Malaysia, India, China, Bangladesh, Vietnam and Singapore), governments have initiated national programmes aiming to prevent development of diabetes. In Malaysia, the prevalence of diabetes mellitus (DM) has become one of the major concerns of the Malaysian Government and healthcare, as prevalence of DM resulted in increased direct cost ascribed to treatment (e.g. dressing and surgical procedures), as well as indirect cost in loss of productivity, social services, home care and quality of life. Educational programmes to enhance self-care practices and to improve glycaemic control were

introduced to diabetics and healthy individuals and were effective in reducing the prevalence of diabetes mellitus in Malaysia. A brief structured education programme conducted showed better self-care efficacy, including better foot care and improved glycaemic control amongst participants from the intervention group (Tan et al., 2011).

Diabetic neuropathy and foot ulceration

Foot ulceration leads to mortality and morbidity and are related to socioeconomic factors due to high costs associated with hospitalisation, rehabilitation and home care (Morbach et al., 2003; Pavicic and Korting, 2006; Veves et al., 1992).

Sensory neuropathy is the major element in the critical pathway for the development of diabetic foot ulceration and amputation. Individuals with diabetes may experience unpleasant sensory symptoms in their feet, including tingling, burning pain, shooting pain down the legs (described as electric shock), and lancinating (knife-like) pains.

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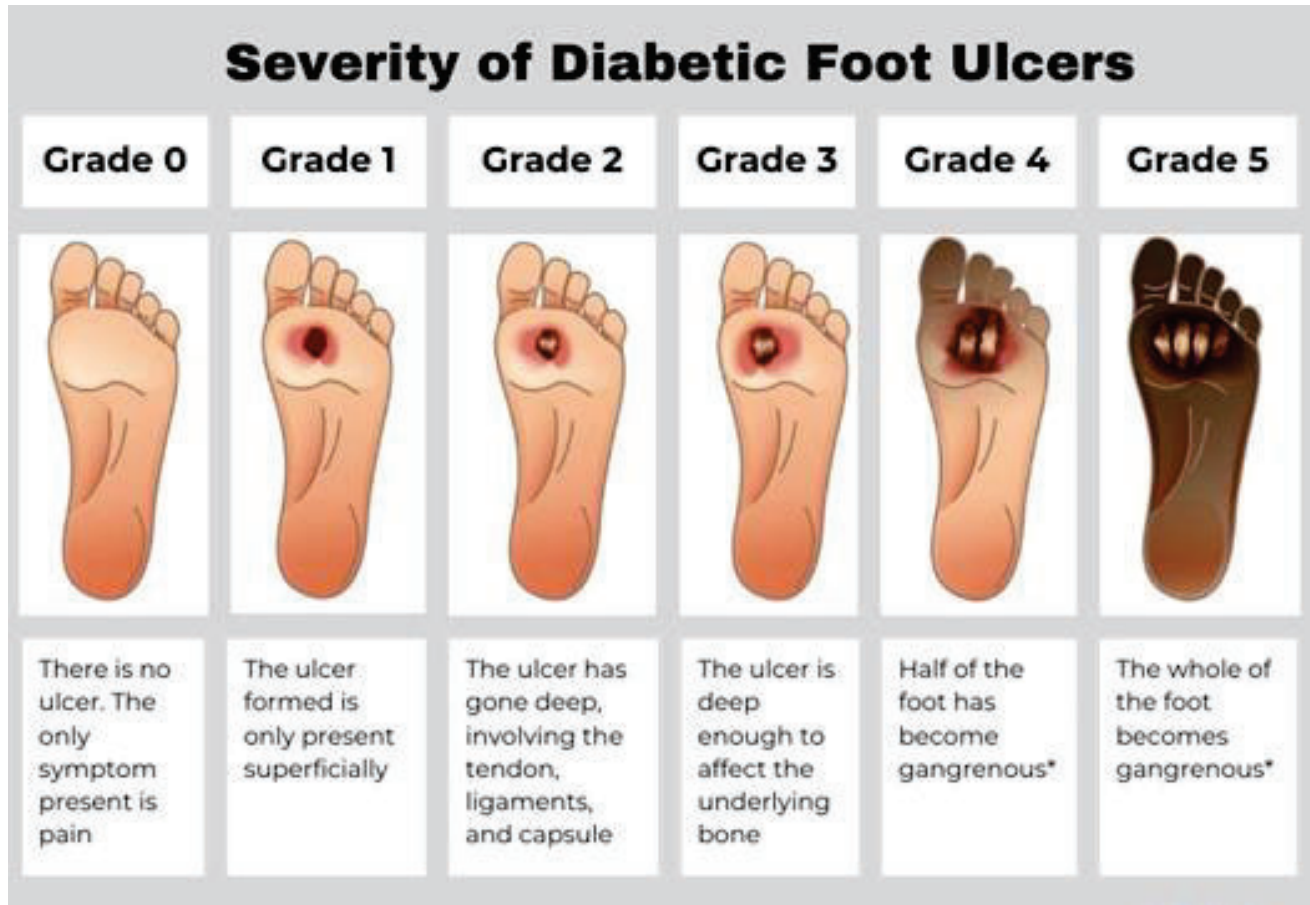


Figure 1: Severity of diabetic foot ulcers (Source: Sree, 2022)

Diabetic patients with painful neuropathy may also feel a variety of painful symptoms including seemingly contradictory sensations of intense heat and cold in the feet (Tesfaye, 2006). Plantar callus, another consequence of sensory neuropathy will develop unnoticed. As mechanical pressure increases progressively, it contributes to tissue destruction (Murray et al., 1996).

Neuropathic ulceration leads to lower limb amputation, which can be triggered by intrinsic (e.g. biological characteristic) and extrinsic factors (e.g. patient's interaction with the environment). The risk of

Plantar callus, another consequence of sensory neuropathy will develop unnoticed. As mechanical pressure increases progressively, it contributes to tissue destruction. Neuropathic ulceration leads to lower limb amputation, which can be triggered by intrinsic and biological factors

diabetic foot ulcer in Malaysia increases with decreasing age, due to high mobility work performed by this younger age category. Patients age 44 years and younger were 5.9 times more at risk of having diabetic foot ulcer compared to patients age 65 years and above (Misliza and Mas Ayu, 2012).

Ethnicity was important factor too as Indians was found to have the highest risk (3.2 times higher) of development of diabetic foot ulcer, followed by Malays (2.2 times) (Misliza and Mas Ayu, 2012). Figure 1 shows the severity of diabetic foot ulcers (Sree, 2022).

Diabetic patients are usually advised and encouraged to stop smoking and drinking alcoholic

Diabetic Sock Features



Figure 2: Example of features required for diabetic sock
(Source: Anonymous, 2023)

drinks, to practice non-weight bearing exercise, to maintain the ideal body weight, and also to wear proper footwear (Misliza and Mas Ayu, 2012). Advice on wearing proper footwear seems to be inadequate either in scope or in uptake since poor understanding of the importance of foot care practice appears to be one of the reasons leading to problems of foot ulceration and amputation in Malaysia. For example, inappropriate foot covering was associated with abnormal foot pressure, ischemia (inadequate blood flow) and inflammation from repetitive stress which resulted in foot ulceration (Misliza and Mas Ayu, 2012).

Advice on wearing proper footwear seems to be inadequate

Socks as foot coverings for person suffering from diabetes mellitus

Foot coverings for diabetic patients are to prevent the initial development of ulcer, recurrence of ulcer, and to encourage a more active life. Socks are categorised as footwear, which gives covering to the lower legs before shoes. A few researchers have examined how socks perform and interact with the body under a variety of conditions of use.

Investigations on socks have been conducted for many purposes such as to reduce deep venous thrombosis for flight-related activities (Sajid et al., 2006; Philbrick et al., 2007), oedema (Geest et al., 2000), occupational leg swelling

(Partsch, Winiger, and Lun, 2004), exercise recovery in sports (Fletcher et al., 2014; Van Roekel, Poss, and Senchina, 2014), and prevention of the diabetic foot (Garrow, Van Schie, and Boulton, 2005; Murray et al., 1993).

Studies conducted established the importance of socks and in preventing or reduce the incidence of diabetic foot diseases.

Interventions using socks for diabetes patients have been conducted worldwide as part of the approach to better care of diabetic feet as shown in Figure 2 (Anonymous, 2023). Thicker socks, accommodated with extra-depth shoes, have been shown to offer additional pressure relief from stresses that act on feet such as step shock,

pressure, friction, and shear. Socks with cushioning over insoles can also protect the lateral and dorsal surfaces of the foot from shear and ulcerate if diabetic patients are subjected to pressure from ill-fitting shoes and reducing pressure. In a nutshell, diabetic foot management is crucial for all diabetic patients to ensure better quality of life and well-being.

References

