



Research Paper

The relationship between self-efficacy and diabetic foot self-care

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ABSTRACT

Aims: Research has shown that the ongoing rate of diabetes-related amputations remains significant despite the existence of prevention methods and that amputation in most cases can be prevented. The purpose of the study was to assess the relationship between the level of self-efficacy and performance of foot self-care in those with diabetes as they relate to the prevention of lower extremity amputation (LEA). **Methods:** A descriptive correlational study was conducted using the theoretical framework of Bandura's social cognitive theory. The Foot Care Confidence Scale (FCCS) and the Nottingham Assessment of Functional Footcare (NAFF) survey instruments were distributed to individuals over 18 years old with diabetes Type 1 and 2 in the lower peninsula of Michigan ($N = 223$).

Results: No significant correlation was identified between the level of self-efficacy and performance of foot self-care behaviors. Statistical significance was found between foot self-care behaviors and gender with males scoring higher than females.

Conclusions: This study adds to the body of knowledge regarding self-efficacy and diabetic foot self-care behaviors. Further research is needed to explore the relationship of gender, diabetes education attendance, and foot self-care behaviors as influencing factors in LEA prevention.

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Introduction

Diabetes affects 25.8 million people in the U.S. with a presumed seven million of those being undiagnosed in 2010, and is on the rise [8]. Diabetes has been noted to be a “complex and potentially devastating chronic illness” [29]; p. 312). Due to the body's inability to properly regulate blood glucose and insulin levels, this chronic illness can cause complications in many areas of the body including the lower extremities and remains the “leading cause of non-traumatic lower-limb amputations” [8]; p. 1–10).

Study aim

The aim of this study was to assess the relationship between the level of self-efficacy and reported performance of daily foot self-care practices in diabetics using a cross-sectional descriptive correlational design via survey questionnaires. The levels of self-efficacy and foot self-care behavior have been assessed in individuals with and without prior history of diabetic foot complications (ulceration, amputation) to determine the impact of these added variables. The

results of the study have been analyzed in order to draw conclusions for directing patient care interventions of nurses in the role of family nurse practitioner whom care for patients with diabetes and at risk foot conditions.

Placing higher emphasis on educating patients and equipping them with the tools they need to play an active role in self-care practices has been the recent trend of health care delivery for people with diabetes and other chronic illnesses. In collaboration with the health care team, optimal disease related outcomes, improved quality of life, and greater satisfaction with treatment are attainable for individuals who are empowered to take an active role in the management of their health [7,9,14,16,22]. Self-efficacy has been described as behavior specific and dynamic, and identifying a person's perception of their capability in a certain setting or with a certain behavior has often been noted as a preeminent indicator of self-care behavior performance [26]. Nurses at all levels are considered promoters of health maintenance, managers of acute/chronic illnesses, consumers of nursing theory and evidenced-based practice, health counselors and most of all patient advocates [17]. With responsibilities such as these encompassed by the scope and standards of the profession, advanced practice nurses are an intricate part of the health promotion and patient care equation, including self-efficacy enhancement and foot self-care teaching to individuals with diabetes.

The World Health Organization [30] estimated the incidence of diabetes as 347 million worldwide, and this finding has doubled

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since 2005. Foot care practices and prevention of wounds among the diabetic population is a prominent role for the nursing professional. Boulton et al. [6] identified that approximately 50% of all non-traumatic lower limb amputations in the US were related to diabetes and/or complications of diabetes. The WHO [31] identified that 80% of all diabetic foot complications could be prevented with basic diabetes management and care. Health education and promotion are key components of nursing care.

Background and significance

Druss et al. [13] noted how one's self-care of a chronic illness when they are not under direct medical supervision can greatly affect their quality of life and their health, as well as influence their collaboration with health care providers. As health care has gradually shifted over time toward prevention rather than cure, society's value in "nursing care that resolves problems or manages health promoting behaviors" [3] has remained steadfast. Self-efficacy advancement is a nursing health promotion intervention which has been linked with positive results. In a randomized control trial (RCT) using self-efficacy as an intervention to improve the outcome of diabetic patients [32], identified improved outcomes in self-care activities, reduced hospitalizations and reduced emergency visits.

Research has shown that the ongoing rate of diabetes-related amputations remains significant despite the existence of prevention methods and the known fact that amputations in most cases, can be prevented [1]. Statistics continue to indicate that "more than 60% of non-traumatic lower-limb amputations occur in people with diabetes" [8; p. 8). The efforts of podiatrists, primary care providers, as well as many other professionals and organizations have been unable to stem the ongoing expense of billions of medical care dollars spent annually on diabetes care related to lower extremity amputations (LEA) [8]. Cook and Simonson [10] reported an average cost of \$26,000–88,000 health care dollars per patient in 2010 varying with the severity of the amputation, highlighting a need for an alternate approach to this issue. These figures are on top of the emotional and physical cost of such an event for each individual in which more frequent hospitalizations and longer lengths of stay are necessitated [10,12]. As a primary care provider, there is a clear need for the nurse practitioner to initiate preventive action early on in order to slow the natural progression of the diabetic foot [1].

According to Stockl et al. [28]; of the diabetic patients who undergo LEA, 28–51% will "require a second leg amputation" (p. 2129) within five years. The risk of ulcers and amputations increases "two to four fold with both age and duration of diabetes," [15; p. 2161] and is often compounded by a history of previous ulceration [14,25,28]. This significant burden to patients as well as to the healthcare system elucidates the need for concentrated preventive interventions and early treatment of diabetic foot ulcers.

In a recent study, McCleary-Jones [16] identified that only self-efficacy was associated with foot self-care. The study revealed that those with higher self-efficacy also were more likely to perform regular foot self-care behaviors. The cost and time required for implementing strategies to prevent LEA in those with diabetes was said to be negligible when compared to the alternative of neglecting such practices; frequently offsetting the cost of expensive surgical amputations and care [12,15]. Therefore, a focus on improved self-efficacy in regard to diabetic foot self-care for those at risk of complications has been proposed to represent an avenue toward prevention of unnecessary LEA.

Primary care providers are in a position to frequently encounter patients with diabetes and therefore are in strategic position in the assessment of overall diabetes health, risk of ulceration, and other factors that may indicate advancing disease. As part of a

multidisciplinary team, the primary care provider is capable of providing effective foot care to patients with diabetes, indicating that proper care is not solely derived from specialty care providers (i.e. podiatrists). As a competent coordinator of care, once foot health issues are identified, the primary care provider is then able to work closely with the patient to implement prevention modalities and initiate treatment of the diabetic foot in order to preserve limbs and lives of those with diabetes [23].

Preventive foot self-care

Considered a psychologically as well as behaviorally demanding chronic illness, diabetes greatly impacts one's daily routine as the illness necessitates constant self-care [11]. As part of a comprehensive approach to diabetes management, daily foot self-care can contribute to an overall reduction of health risks and complications from the disease [8,14]. Therefore, one's daily self-care is a key factor in prevention of lower extremity amputations in those with diabetes since it is up to the patient to make personal decisions regarding the actions they will take. These facts draw attention to the importance of foot self-care for those with diabetes and demand employment of innovative preventive care approaches by health care providers, including consideration of the impact of self-efficacy on such practices.

Organizations such as the National Institute of Diabetes, Digestive and Kidney Diseases [18] and the American Diabetes Association [2] maintain a focus on prevention of lower extremity amputations (LEA) in people with diabetes and strongly advocate for the practice of daily foot self-care as the main prevention strategy. Using the definition of self-care provided by Richard and Shea [22] as "performance of activities necessary to achieve, maintain, or promote optimal health," (p. 256) the connection to preventive foot self-care practices in those with diabetes is evident as well as consistent with the definition. The NDIC [18] and ADA [2] have recommended simple daily practices to monitor the condition of feet and provide appropriate preventive foot self-care. Such practices generally consist of maintaining proper control of blood glucose levels, checking feet daily, and protecting feet from potential sources of injury and skin breakdown.

The general lack of current research to support an up to date evidence-based approach to diabetes self-care and barriers to its practice have indicated a need for more nursing research on the topic of self-efficacy to determine its continued relevance in improving self-care behaviors of those with diabetes rather than simply educating them on the disease and related complications. Furthermore, the relatively limited expanse of studies specific to foot self-care has demanded more research and more attention in order to promote the use of evidence-based care in the prevention of lower extremity complications in those with diabetes.

Theoretical framework

The primary constructs of social cognitive theory: knowledge, perceived self-efficacy, outcome expectations, goals, and perceived facilitators & impediments, interact to formulate the control a person has over their illness, influencing "human motivation and action" ([5]; p. 144). The theory proposes that without adequate confidence in one's self to accomplish required activities and reach desired goals, self-care actions will not be performed [5]. This notion has been reiterated numerous times by many researchers and can be applied to diabetic foot self-care in the sense that one can *know* it is necessary to care for their feet, but if they are not confident they *can* care for their feet, they are less likely to perform self-care activities.

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