Scientific Research Publishing

Open Journal of Preventive Medicine, 2024, 14, 79-89
https://www.scirp.org/journal/ojpm
ISSN Online: 2162-2485
ISSN Print: 2162-2477

Research Progress on Self-Efficacy Level of Patients with Type 2 Diabetes Mellitus and Its Influencing Factors

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How to cite this paper: Li, P.L. and Guo, J.J. (2024) Research Progress on Self-Efficacy Level of Patients with Type 2 Diabetes Mellitus and Its Influencing Factors. *Open Journal of Preventive Medicine*, **14**, 79-89.
https://doi.org/10.4236/ojpm.2024.145007

Received: April 25, 2024
Accepted: May 20, 2024
Published: May 23, 2024

Abstract

Self-efficacy plays an important role in the management of type 2 diabetes mellitus (T2DM) patients, and it runs through the whole process of diabetes treatment, which is conducive to controlling and delaying the occurrence and development of complications, as well as improving the quality of life of patients. This paper mainly describes the concept of self-efficacy, the current situation of self-efficacy of diabetic patients at home and abroad, the functional aspects and their influencing factors, so as to take relevant measures on how to improve self-efficacy. It aims to provide a theoretical basis for the development of self-efficacy interventions for patients with type 2 diabetes mellitus.

Keywords

Type 2 Diabetes, Self-Efficacy, Influencing Factors, Measures

1. Concept and Status of Self-Efficacy

The term "Self-Efficacy" was first coined by psychologist Bandura [1], who argued that self-efficacy is a subjective inference about one's ability to perform a particular behaviour, *i.e.*, it refers to an individual's overall level of self-confidence in confronting and dealing with a difficult situation [2]. Studies at [3] [4] have shown that self-efficacy is an important influence on glycaemic management and plays a positive role in promoting behavioural change and glycaemic control by improving self-management of various activities, such as diet, physical activity, glucose monitoring and medication adherence, which has a positive effect on maintaining control and delaying the development of acute and chronic com-

plications [5]. However, the self-efficacy level of T2DM patients is mostly unsatisfactory, and they generally show poor self-confidence in fighting diabetes. In a foreign study [6], it was found that only 16.8% of diabetic patients have high level of self-efficacy; and all of them are in the middle level [7] [8], and relevant scholars in China have also reached the same conclusions from the related study [9] [10], which shows that most of the self-efficacy of T2DM patients in China is in the middle level. This means that most of the diabetic patients have a low level of self-efficacy in believing in themselves. This means that most of the diabetic patients show poor self confidence in believing that they can reach the standard of glycaemic control in long-term diabetes management, and their self-efficacy level needs to be improved.

2. Impact of Self-Efficacy on People with Type 2 Diabetes Mellitus

2.1. Impact on Adherence to Treatment

For T2DM patients, the cornerstone of achieving ideal glycaemic control is long-term regular treatment. Long-term comprehensive treatment with medication, exercise, glucose testing and dietary modification is needed to control blood glucose levels. However, long-term treatment will increase the psychological burden of patients and weaken their sense of self-efficacy, which will easily lead to lower adherence to treatment, which is not conducive to glycaemic management and may exacerbate the progression of the disease [11]. Thus, poor adherence is one of the barriers to achieving optimal glycaemic control in patients with T2DM and a key factor in suboptimal glycaemic control [12].

However, current studies at home and abroad suggest that T2DM patients' treatment adherence is not high. The survey results of foreign scholars Alirez *et al.* [13] on the treatment adherence of T2DM patients showed that only 13.6% of T2DM patients had good drug adherence, 17.4% had good dietary adherence, and 10.4% had good exercise adherence. Although domestic scholars' research on T2DM patients' treatment adherence is based on the unidimensional investigation of medication adherence, the results are consistent with foreign research scholars, such as Zhang Yi *et al.* [14] study showed that only 22.32% of T2DM patients had good medication adherence; Lv Guiying *et al.* [15] study found that only 29.76% of T2DM patients had good medication adherence. It can be seen that the treatment adherence of T2DM patients is not ideal, and poor adherence has become one of the obstacles for T2DM patients to achieve the goal of optimal glycaemic control, and this problem has attracted the attention of healthcare professionals. In a clinical study of interventions for poor treatment adherence in patients with T2DM, it was found that lower self-efficacy was strongly associated with poorer adherence to medication, diet, exercise, and glucose self-monitoring [16] [17]. The reason for this is that the lower the self-efficacy of the patient, the less capable he/she believes himself/herself to be in the management of blood glucose in T2DM, and consequently the poorer the adherence, which

leads to unfavourable behaviours in the treatment of the disease that are contrary to the doctor's instructions. In addition, Xie *et al.* [18] found that self-efficacy mediated the association between older age and greater adherence to dietary treatment, suggesting that a lack of self-efficacy is a reason for poorer adherence to healthy eating in younger patients. Therefore, clinical staff should not limit their attention to the older T2DM patient population, but should also focus on this younger population and interventions to improve their self-efficacy to maintain a healthy diet.

2.2. Impact on Behavioural Aspects of Self-Management

The level of self-efficacy is an important indicator of health behaviour change, which increases or decreases a person's motivation to engage in action. Increased levels of self-efficacy are an important prerequisite for behavioural change and may lead to increased life expectancy. Therefore, positive behavioural change in patients is the most important aspect of diabetes treatment [19].

Self-management behaviours refer to protective constraining behaviours adopted by patients to achieve certain health goals [20]. Self-management behaviours for people with T2DM usually include diet, physical activity, medication and blood glucose monitoring [21]. Since diabetes self-management is a long-term behaviour, if patients do not see significant results in the early stages of treatment, they may have difficulty adhering to self-management behaviours for a long period of time and may choose to abandon the self-management process. The results of a survey on the self-management ability of community diabetes patients in Jiangsu, Shanxi and Henan provinces in China showed that [22], 67.9% of the 2609 study participants were able to comply with the doctor's prescription of medication on time and in accordance with the amount of medication, 61.1% of them exercised regularly, 47.9% of them controlled their diets strictly, and only 48.7% of them tested their blood glucose regularly, which was unsatisfactory in general, and the conclusion was in line with the findings of domestic and international studies. [23] [24] This conclusion is consistent with domestic and international studies.

In order to improve the positive self-management behaviours of T2DM patients, researchers have found that self-efficacy has a significant correlation with it, and that having a good level of self-efficacy can help patients to understand diabetes correctly, build up self-confidence in fighting the disease, and thus promote self-management behaviours, which is more conducive to helping patients to control their blood glucose effectively. Self-efficacy is considered to be the strongest predictor of diabetic patients' self-management behaviours, and there is a positive correlation between the two [25]. In other words, the higher the level of self-efficacy, the more beneficial it is for T2DM patients to engage in self-management behaviours. Subsequently, Xie *et al.* [18] clearly found that higher self-efficacy was associated with better adherence to dietary treatment and medication as well as greater participation in regular exercise, and further emphasised self-efficacy's role as a major determinant of adherence to a healthy

diet and physical activity. Thus higher levels of self-efficacy in patients indicated that patients perceived themselves as more capable of self-management and thus adhered to self-management behaviours such as exercising regularly, maintaining a healthy diet and adhering to medication, whereas lower levels of self-efficacy were associated with higher resistance to self-management behaviours such as engaging in dietary treatments, physical activity and blood glucose monitoring. In addition, the relationship between the two is reciprocal; when self-management improves, it in turn improves self-efficacy, and the two are mutually reinforcing [26].

2.3. Impact of Self-Efficacy on Psychological Resilience

Resilience refers to an individual's ability to adapt and recover from stress, adversity, setbacks and challenges [27]. Resilience protects the mental state and self-management, but it emphasises the positive state of mind and the use of the body's own initiative in the face of these obstacles [28]. As diabetes cannot be cured and requires long-term treatment and management, and may even require changes in lifestyle habits formed over the years, as well as the need to face the threat of complications that diabetes may bring, this may undoubtedly cause diabetic patients to develop a huge psychological burden and many adverse psychological emotions, such as stigma, anxiety, depression, pain and other emotions, which ultimately lead to the patient's inability to correctly face and manage the disease, making the level of psychological resilience decrease. The level of psychological resilience decreases [29] [30]. Therefore, how to improve the psychological resilience of patients is crucial.

Research has confirmed that [30] self-efficacy is one of the important factors affecting psychological resilience, and the two are positively correlated, *i.e.*, the higher the self-efficacy the better the psychological resilience. In short, diabetic patients with high self-efficacy are able to establish a good cognitive evaluation system, have high self-confidence, cope positively with difficulties and pressures, and reduce anxiety and pain when they achieve the goals of lifestyle change and glycaemic control, thus improving the level of psychological resilience. However, at present, in studies exploring the psychological problems of diabetic patients, researchers mostly focus on anxiety, depression, psychological pain, etc., and the study of psychological resilience of diabetic patients is still in its infancy [31]. Therefore, in future research, clinical staff should explore the psychological elasticity of diabetic patients in more depth, and in clinical work, medical staff need to pay attention to cultivate and improve the self-efficacy of diabetic patients, improve their confidence in facing the disease, and promote the patients to maintain a good state of mind.

3. Factors Affecting Self-Efficacy in Patients with Type 2 Diabetes Mellitus

3.1. General Demographic Factors

Many studies [7] [32] [33] [34] have shown that self-efficacy is correlated with

age, gender, literacy, economic status, and region of residence. The reasons for this may include the following:

1) Age: Young and middle-aged T2DM patients are under both social and family pressure as pillars of the family and society, and this group is more susceptible to external influences and may not spend more time on glycaemic management. Conversely older patients, who may have fewer work responsibilities and therefore more free time, may be more willing or find it less challenging to undertake disease-related self-management, and older patients may find it easier to integrate regular self-monitoring or other self-care behaviours into their more routine daily lives. However, due to the prevalence of diabetes, previous research on diabetes has focused more on the elderly population, and this group should therefore be a key focus of attention for young and middle-aged T2DM patients.

2) Gender: There is a controversy about the relationship between gender differences and self-efficacy in T2DM patients. Park *et al.* [32] believe that due to the conflict of social roles, most of the females may bear the main responsibility of taking care of the family and children, and are more likely to be prone to bad emotions due to trivialities, which may lead to lower self-efficacy and make the management of blood glucose poorer. However, another scholar at [35] found that the self-efficacy level of female T2DM patients was higher. Therefore, more in-depth research is needed on the gender differences in self-efficacy in the future.

3) Economic status: for patients with average economic level, long-term treatment increases the financial burden of the family, which may hinder patients from adhering to the treatment and management of the disease, resulting in the loss of self-confidence of the patient to not accept or even resist the acquisition of diabetes health knowledge, so that their self-efficacy level may be relatively poor; while for patients with relatively high economic level, based on sufficient time and money On the other hand, for patients with relatively high economic level, on the basis of sufficient time and money, it is favourable for them to be more actively involved in the long-term management of the disease, and their self-efficacy in combating the disease is relatively high.

4) Literacy level: Previous studies have shown that the higher the patient's education level, the greater the access to diabetes-related support, which is conducive to a correct understanding of diabetes and increased self-confidence in combating the disease, thus improving self-efficacy levels and disciplining self-behaviour; in contrast, lower education levels and a lack of diabetes-related knowledge tend to be accompanied by a higher level of diabetes distress and a lower level of education, Lower levels of diabetes-related knowledge may lack the ability to cope with diabetes distress in everyday life and may further exacerbate the development of diabetes. However, this claim is controversial. In the study by Xie *et al.* [18] it was stated that higher literacy was associated with higher self-efficacy, but this did not translate into higher adherence to self-management. Further research into the role of self-efficacy in shaping patients' adherence to

self-management behaviours is therefore necessary.

5) Residence: Compared with residents living in urban areas, medical resources and education capacity in rural areas are relatively weak, and rural residents' health awareness is relatively low, so their knowledge of diabetes health is low, and their self-efficacy level is relatively low.

Based on these findings, it is suggested that potentially effective tailored interventions can be made starting with the above factors to improve the sociodemographic group of patients in this study who exhibited low levels of self-efficacy.

3.2. Disease-Related Factors

Regardless of T1DM or T2DM, they are all chronic diseases with a long disease duration, and the duration of the disease is one of the key influencing factors of disease management. However, there are controversies about the level of self-efficacy caused by the duration of the disease. For example, Xia Yingye *et al.* [36] believe that the longer the duration of the disease, the more experience the patient accumulates from the disease, the more comprehensive the understanding of the disease, the clearer the harm of the disease, and the self-confidence to fight against the disease will be increased, which is known as the "disease of long time becomes a doctor". However, Wang *et al.* [34] concluded that the longer the duration of the disease, the lower the self-efficacy scores of diabetic patients, probably because diabetic patients are more susceptible to external influences and negative emotions in the process of glycaemic management, which reduces their self-confidence in managing the disease.

3.3. Psychosocial Factors

Social Support (Social Support) refers to the fact that when people are under pressure, face crisis or social environment needs, people need to perceive and obtain certain support from their own social network, which often mainly originates from spouses or partners, close friends, co-workers, family members, patients and friends and even the network. It can reduce the psychological stress reaction brought about by the disease, relieve the mental stress caused by facing the disease alone, and improve the patient's ability to adapt to the disease and confidence in recovery [37].

As far as the general public is concerned, they usually believe that diabetes is caused by poor eating habits, lack of exercise, laziness, etc. This "perception" is put into practice, making diabetic people unable to obtain adequate social support, which can easily lead to a wide range of negative emotions, and thus play a negative role in physical and mental health [38]. A large body of literature [39] [40] [41] supports the idea that social support is positively related to self-efficacy. With the increase of social support, self-efficacy also increases, and the negative emotions of diabetic patients also decrease, which will be more conducive to mobilise the enthusiasm of patients to fight against the disease, and motivate the patients to carry out health management, so it can be seen that good social support can provide a strong backing for the patients.

3.4. Health Literacy Factors

Health Literacy (HL) is the ability to read, understand, and use basic health information, to possess relevant health knowledge, to take appropriate health care to maintain one's health status, and to participate in and make appropriate health decisions to better manage one's health [42]. Much of the literature [43] [44] [45] [46] has confirmed that HL is positively associated with self-efficacy and that improved HL skills are conducive to self-efficacy. HL is a skill that guides behaviour through judgement and decision-making, and HL is essential for successful access to and utilisation of health care by people with chronic conditions, and those with higher levels of HL are more likely to make health-promoting decisions and adopt healthier behaviours. Self-efficacy, on the other hand, refers to a belief. An increase in HL demonstrates that an individual has access to more health information, allowing him or her to be more judgemental, which facilitates his or her ability to properly cope with a disease such as diabetes, leading to an increase in self-efficacy and to take active steps to combat the disease. Thus, HL almost directly influences the presence of self-efficacy in T2DM patients. However, it is also controversial: Medina *et al.* [7] argue that there is also no association between self-efficacy and HL, probably because self-efficacy stems from the idea of achieving results through personal motivation, which manifests itself in an abstract and relative way, and which can lead to having specific or general behaviours, but at the same time it is not objectively measurable. In the case of HL, it is a skill that guides behaviour through judgement and decision making in a more conscious way that can be measured in a more concrete way. Therefore, how to go about measuring self-efficacy and HL levels and ensuring their true objectivity still needs to be thoroughly researched.

4. Summary

Self-efficacy is a common feature of T2DM patients throughout the treatment process, but as diabetes is a chronic disease that cannot be completely cured, T2DM patients will encounter multiple obstacles during the long course of the disease, which may cause their self-efficacy to gradually decline, which will affect the later treatment and may further exacerbate the development of diabetes complications. Therefore, it is important to carry out targeted interventions or provide external support for patients to improve their self-efficacy and maintain a good level of disease management. Diabetes self-efficacy is closely related to the development of the disease, so exploring a more scientific and effective self-efficacy intervention model is the key to strengthening patients' adherence to treatment, reducing complications, enhancing patients' self-management ability, and improving the quality of life.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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