Journal of Clinical and Nursing Research, 2025, Volume 9, Issue 1
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

Applying Snyder's Hope Theory to Enhance Self-Management in Diabetic Patients

Rui Gao[1], Cuiyu Han[2], Yanhong Cheng[2], Li Jiang[3], Zhixin Zhang[4], Yujie Gu[5]*

[1]Blood Collection Center, Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China

[2]Outpatient Department, Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China

[3]Department of Tuberculosis, Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China

[4]Department of Head and Neck Surgery, Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China

[5]Department of Endocrinology, Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China

***Corresponding author:** Yujie Gu, 15176391853@163.com

Abstract: *Objective:* To explore the application effect of self-management based on Snyder's hope theory in diabetic patients. *Methods:* A total of 260 patients with diabetes from a community were selected through convenient sampling and randomly divided into an experimental group and a control group using the random number table method, with 130 cases in each group. Five cases were lost in the experimental group, resulting in 125 effective cases, while all 130 cases in the control group were effective. The control group received standard lectures on diabetes self-management behavior and traditional approaches, such as the distribution of educational manuals. The experimental group underwent a self-management behavior intervention program for diabetic patients based on Snyder's hope theory model, encompassing three components: goals, pathways, and motivational thinking. The levels of hope and self-management behavior were compared between the two groups. *Results:* After the intervention, the scores for hope levels and self-management behaviors in both groups were significantly higher than those recorded before the intervention ($P < 0.05$). Furthermore, the hope level and self-management behavior scores of the experimental group were significantly higher than those of the control group ($P < 0.05$). *Conclusion:* The application of Snyder's hope theory model in diabetic patients demonstrates significant benefits, improving patients' hope levels and, consequently, enhancing their self-management behaviors.

Keywords: Diabetes; Snyder's hope theory; Self-management; Treatment compliance

Online publication: February 13, 2025

1. Introduction

The 10th edition of the International Diabetes Federation (IDF) report states that in 2021, 537 million adults aged 20–79 years worldwide were living with diabetes [1]. In China, the prevalence of diabetes among adults increased

from 8.8% in 2011 to 10.8% in 2021, with 140.9 million individuals aged 20–79 years diagnosed with diabetes, placing China first globally. Additionally, the IDF estimated that global health expenditure on diabetes in 2021 was $966 billion, with China contributing approximately $165.3 billion. Diabetes and its complications impose a substantial economic burden on patients, families, and society [1].

Diabetes management requires continuous adjustment based on the progression of the disease, with self-management serving as the foundation. Effective self-management is crucial for glycemic control and the prevention of complications. However, both domestic and international studies have revealed that the self-management behaviors of diabetic patients remain suboptimal. Poor self-management often results in blood glucose fluctuations and a series of complications. Self-management has been found to correlate with the development of various diabetes-related complications. Laxy *et al.* [2] and Kent *et al.* [3] reported a negative correlation between self-management and the risk of diabetic neuropathy. Chen *et al.* [4] found that regular physical exercise and good dietary control significantly reduced the incidence of retinopathy. Mehravar *et al.* [5] emphasized that self-management plays a pivotal role in reducing the incidence of nephropathy and neuropathy in patients with type 2 diabetes mellitus. Similarly, Khanna *et al.* [6] and Lin *et al.* [7] suggested that active participation in self-management not only improves clinical outcomes, such as glycated hemoglobin levels and the occurrence of complications but also enhances patients' quality of life. Consequently, improving self-management behaviors in diabetic patients remains an urgent concern.

Perceptions and beliefs regarding the disease are critical factors influencing self-management behaviors in diabetic patients [8]. Hope, a positive psychological factor, significantly impacts patients' quality of life and disease prognosis. Snyder's hope theory [9] is based on three components: goals, pathway thinking, and motivational thinking. Goals represent the central element of the theory. Once a goal is established, pathways are designed to achieve the goal, forming pathway thinking. Motivational thinking refers to the motivational system required to attain the goal and constitutes the motivational component of hope. These three elements are independently unified and interact dynamically.

This study develops a self-management intervention program for diabetic patients based on Snyder's hope theory and evaluates its preliminary application to assess the intervention's effectiveness. The findings aim to provide a basis for behavioral interventions targeting self-management in diabetic patients, offering guidance to enhance self-management levels, reduce the incidence of complications, and improve patients' quality of life.

2. Materials and methods

2.1. General information

Diabetic patients in a tertiary hospital were selected from July 2022 to September 2023. The sample size was calculated using the formula $n_1 = n_2 = 2\{[(Z_{\alpha/2} + Z_{\beta})\sigma]/\delta\}^2$, with parameters derived from references. The calculated sample size was $n_1 = n_2 = 120$ cases, and an additional 10% was included to account for invalid cases, resulting in 132 cases to be collected. Ultimately, the experimental and control groups included 65 cases each.

Patients were required to meet the 1999 World Health Organization (WHO) diagnostic criteria for diabetes mellitus.

Inclusion criteria: (1) Age ≥ 18 years; (2) Diagnosis duration ≥ 1 month; (3) Full cognitive and behavioral abilities; (4) Informed consent provided.

Exclusion criteria: (1) Presence of malignant tumors; (2) Gestational diabetes mellitus; (3) Physical activity limitations due to complications or comorbidities; (4) Acute complications; (5) Medical personnel or individuals

engaged in healthcare work.

This study was approved by the Ethics Committee of the Affiliated Hospital of Hebei University (Approval No. HDFY-LL-2022-035).

2.2. Research methodology

2.2.1. Intervention design

The selected diabetic patients were randomly assigned to the experimental and control groups using the random number table method. The control group received traditional education methods, including regular lectures on diabetes self-management and the distribution of educational brochures. The experimental group underwent a self-management behavioral intervention program based on Snyder's hope theory, focusing on goals, pathways, and motivational thinking. The intervention lasted six months, with follow-ups conducted at one, three, and six months. The effects of the intervention were assessed by observing self-management behaviors, hope levels, self-efficacy, and glycated hemoglobin improvements. Details of the intervention program are outlined in **Table 1**.

Table 1. Self-management behavioral intervention program based on Snyder's hope theory

Phase	Theme	Content	Form and place	Duration
First week	Build trust	(1) Conduct face-to-face conversations with patients to explain the study's purpose and content. (2) Establish WeChat groups.	Individual interventions, hospital wards	15–30 minutes
	Baseline survey	Administer a questionnaire to assess self-management skills, hope levels, and self-efficacy.		
	Encourage openness	Guide patients to discuss their disease course, significant past events, and personal achievements.	Individual interventions	15–30 minutes
	Instill hope	(1) Inspire patients with positive visions for their future, tailored to age, gender, and interests. (2) Collaborate with patients to create lists of future goals, fostering optimism.		
Second week	Establish goals	(1) Develop individualized self-management goals for cognitive, affective, and motor skill domains based on Bloom's taxonomy. (2) Organize goals to provide patients with a sense of accomplishment, enhancing their confidence.	Individual interventions, online platforms	15–30 minutes
Third week	Pathway thinking	(1) Diabetes education, including topics on diet, exercise, blood glucose monitoring, and medication. (2) Customized intervention methods tailored to the characteristics of the participants, teaching objectives, and content: (a) Cognitive domain: Lectures, case studies, and discussions. (b) Emotional domain: Experience sharing and presentations. (c) Motor skills domain: Demonstrations and hands-on practice. (3) Utilization of mind maps, short videos, educational cards, and health education manuals for better comprehension and engagement.	Individual interventions were conducted via microblogging platforms, group interventions were facilitated through the Tencent Conference.	15–30 minutes per session, conducted three times in total (once for each domain: cognitive, emotional, and motor skills).
Fourth week	Motivational thinking	(1) Commitment strategy: Patients receive rewards upon reaching specific milestones, with progressive upgrades to increase motivation and engagement. (2) Happy factor method: Guidance is provided to help patients maintain a positive outlook, adjust their mindset, and reintegrate into society. Individual questions are addressed one-on-one. (3) Positive reinforcement: Targeted encouragement and rewards are offered to patients with low hope levels, poor self-management skills, or limited adherence, aiming to enhance their self-efficacy and hope. (4) Role model guidance: Sharing of successful cases by patients with good glycemic control, along with presentations of their strategies and insights, to inspire others. (5) Self-motivation: Patients are encouraged to boost their confidence through affirmations such as "I can do it" and "I will not back down."	Individual interventions were conducted via microblogging platforms, group interventions were facilitated through the Tencent Conference.	15–30 minutes per session, conducted twice in total.

2.3. Observational indicators and research tools

The following indicators and tools were used to observe and assess the intervention outcomes:

(1) General information: General demographic and socioeconomic information was collected, including age, gender, marital status, education level, ethnicity, occupation, religious beliefs, monthly family income, medical expense coverage, and type of diabetes.

(2) Self-management behavioral scale for diabetic patients: The Diabetes Self-Management Questionnaire (DSMQ), developed by the Diabetes Society of Bad Mergentheim, Germany, was utilized [10]. The questionnaire comprises 16 items across six dimensions: medication compliance (2 items), glucose monitoring (3 items), dietary control (4 items), physical activity (3 items), follow-up (3 items), and overall evaluation (1 item). Responses were scored on a 4-point Likert scale (0 = not applicable, 1 = somewhat applicable, 2 = moderately applicable, 3 = highly applicable). Positive scores were assigned to items 1, 2, 3, 4, 6, 8, and 9, while others were reverse scored. The total score ranged from 0 to 48, with higher scores indicating better self-management behavior. The scale demonstrated good reliability (Cronbach's $\alpha = 0.764$) and validity, with exploratory factor analysis yielding a cumulative variance contribution rate of 67.572%, and factor loadings above 0.40.

(3) Hope scale: Herth's Hope Scale, translated and introduced by Zhao [11], was employed to evaluate patients' hope levels. The scale consists of 12 items distributed across three dimensions: positive attitudes toward reality and the future (items 1, 2, 6, and 11), taking positive actions (items 4, 7, 10, and 12), and maintaining close relationships (items 3, 5, 8, and 9). Responses were scored on a 4-point Likert scale, with reverse scoring for items 3 and 6. Total scores ranged from 12 to 48, categorized as low hope (12–23), moderate hope (24–35), and high hope (36–48). The scale exhibited strong reliability (Cronbach's $\alpha = 0.87$).

(4) Self-efficacy scale: The General Self-Efficacy Scale (GSES), developed by Schwarzer and translated into Chinese by Zhang and Schwarzer [12], was utilized to assess self-efficacy. The scale includes 10 items scored on a 4-point Likert scale. Higher total scores indicate stronger self-efficacy. Based on the score index (score index = actual score/highest possible score × 100%), self-efficacy levels were categorized as high (≥ 80%), medium (60–80%), and low (≤ 60%). The scale demonstrated reliability, with Cronbach's α ranging from 0.75 to 0.94 across studies, and retest reliability ranging from 0.55 to 0.75.

(5) Glycated hemoglobin (HbA1c): The American BIO-RAD VARIANT II hemoglobin testing system was employed to measure HbA1c, reflecting blood glucose levels over the preceding 2–3 months. Measurements were taken at baseline (hospital admission) and three and six months post-intervention.

2.4. Data collection

An intervention team was formed to implement the study. The primary investigator contacted the hospital to explain the study's purpose and significance, securing institutional support. Eligible diabetic patients were enrolled after meeting the inclusion criteria and providing informed consent. The intervention program was administered to the experimental group, while the control group received standard education. Patients' self-management abilities, hope levels, and self-efficacy were assessed before the intervention and at one, three, and six months afterward. HbA1c levels were evaluated at three and six months post-intervention to assess glycemic control.

2.5. Statistical analysis

Statistical analyses were conducted using SPSS 25.0. Descriptive statistics, including mean, standard deviation,

frequency, and percentage, were used to summarize demographic and baseline characteristics. Repeated-measures analysis of variance (ANOVA) was applied to compare diabetes self-management behaviors, hope levels, self-efficacy, and HbA1c levels between the experimental and control groups at one, three, and six months post-intervention. Statistical significance was determined using a two-sided test with a significance level of $P < 0.05$.

3. Results

3.1. General information

The comparison of general information between the two groups of patients did not yield statistically significant differences ($P > 0.05$), indicating comparability. See **Table 2** for details.

Table 2. General information

Variant		Experimental group (n = 65)	Control group (n = 65)	t / χ^2	P
Age (mean ± SD)		54.55 ± 20.18	54.17 ± 15.89	0.121	0.904
Gender [n (%)]	Male	33 (50.8%)	31 (47.7%)	0.123	0.726
	Female	32 (49.2%)	34 (52.3%)		
Ethnic group [n (%)]	Han	64 (98.5%)	1 (1.5%)	0.000	1.000
	Others	1 (1.5%)	1 (1.5 %)		
Religious belief [n (%)]	Yes	6 (9.2%)	4 (6.0%)	0.433	0.510
	No	59 (90.8%)	61 (93.8%)		
Educational attainment [n (%)]	Primary and below	8 (12.3%)	3 (4.5%)	7.205	0.125
	Junior high school	19 (29.2%)	30 (46.2%)		
	Secondary/High school	17 (26.2%)	19 (29.2%)		
	Three-year college	12 (18.5%)	9 (13.8%)		
	Undergraduate and above	9 (13.8%)	4 (4.5%)		
Marital status [n (%)]	Single	8 (12.3%)	6 (9.2%)	6.507	0.320
	Married	54 (83.1%)	59 (90.8%)		
	Divorced	1 (1.5%)	0 (0%)		
	Widowed	2 (3.0%)	0 (0%)		
Residential area [n (%)]	Rural	34 (52.3%)	31 (47.7%)	0.277	0.599
	Urban	31 (47.7%)	34 (52.3%)		
Monthly per capita household income [n (%)]	< 2,000	23 (35.5%)	16 (24.6%)	11.046	0.011
	2,000–3,999	17 (26.1%)	35 (53.8%)		
	4,000–5,999	17 (26.1%)	11 (16.9%)		
	≥ 6000	8 (12.3%)	3 (4.5%)		
Medical expense payment method [n (%)]	Medical insurance	34 (52.3%)	47 (72.3%)	6.661	0.036
	Self expenses	29 (44.6%)	18 (27.7%)		
	Commercial insurance	2 (3.0%)	0 (0%)		
Type of diabetes [n (%)]	Type 1	9 (13.8%)	7 (10.8%)	0.285	0.593
	Type 2	56 (26.1%)	58 (89.2%)		

3.2. Comparison of self-management behaviors, hope levels, and self-efficacy between the two groups before and after the intervention

Repeated measures ANOVA was conducted to compare self-management behaviors, hope levels, and self-efficacy scores between the two groups. The time factor in this study comprised four levels: baseline (pre-intervention), 1-month post-intervention, 3-month post-intervention, and 6-month post-intervention. The intervention factor was present at two levels in both the control and intervention groups.

Mauchly's sphericity test was applied to the scores for each outcome, with Mauchly's W values of 0.517, 0.339, and 0.301 for self-management behaviors, hope levels, and self-efficacy, respectively. As $P < 0.05$ for all tests, the assumption of sphericity was violated. Consequently, the Greenhouse-Geisser correction was applied.

3.2.1. Comparison of self-management behaviors before and after intervention

Table 3 presents a detailed comparison of self-management behavior scores at different time points in both groups.

Table 3. Comparison of self-management behaviors before and after intervention (score, mean ± SD)

	Pre-intervention	Post-intervention			Repeated measures ANOVA	
		1 month	3 months	6 months	*F*	*P*
Control group	38.02 ± 8.12	35.00 ± 7.70	31.88 ± 6.93	31.88 ± 8.93		
Experimental group	39.77 ± 9.24	39.15 ± 7.12	37.40 ± 7.60	36.43 ± 8.09		
Intervention main effect					45.634	0.000
Time main effect					10.631	0.01
Intervention × Time					7.915	0.000

3.2.2. Comparison of hope levels before and after intervention

Table 4 presents a detailed comparison of hope levels at different time points in both groups.

Table 4. Comparison of hope levels before and after intervention (score, mean ± SD)

	Pre-intervention	Post-intervention			Repeated measures ANOVA	
		1 month	3 months	6 months	*F*	*P*
Control group	32.99 ± 5.30	36.83 ± 6.16	38.38 ± 4.36	39.03 ± 3.95		
Experimental group	34.60 ± 6.12	37.45 ± 5.09	37.20 ± 5.00	37.12 ± 4.97		
Intervention main effect					0.06	0.907
Time main effect					86.041	0.000
Intervention × Time					14.495	0.000

3.2.3. Comparison of self-efficacy before and after intervention

Table 5 presents a detailed comparison of self-efficacy at different time points in both groups.

Table 5. Comparison of self-efficacy before and after intervention (score, mean ± SD)

	Pre-intervention	Post-intervention			Repeated measures ANOVA	
		1 month	3 months	6 months	F	P
Control group	22.70 ± 7.29	27.72 ± 7.38	30.25 ± 4.70	31.10 ± 3.93		
Experimental group	25.57 ± 9.07	28.78 ± 8.25	28.30 ± 8.22	28.10 ± 8.19		
Intervention main effect					0.000	0.997
Time main effect					46.713	0.000
Intervention × Time					30.952	0.000

3.3. Comparison of dynamic changes in glycated hemoglobin levels before and after intervention in the two groups of patients

Mauchly's sphericity test was performed on the glycated hemoglobin scores of the intervention and control groups at each time point (**Table 6**). The Mauchly's W value was 0.320, with a *P*-value < 0.05, indicating that the sphericity assumption was not met. Therefore, Greenhouse-Geisser correction was applied in this analysis.

Table 6. Comparison of glycated hemoglobin levels before and after the intervention in the two groups (mean ± SD)

	Pre-intervention	Post-intervention		Repeated measures ANOVA	
		3 months	6 months	*F*	*P*
Control group	8.78 ± 2.57	6.82 ± 1.61	6.81 ± 1.93		
Experimental group	8.47 ± 2.71	7.53 ± 2.09	7.62 ± 2.39		
Intervention main effect				35.833	0.662
Time main effect				260.770	0.000
Intervention × Time				34.044	0.000

4. Discussion

Diabetes mellitus is a common chronic lifelong disease, and patient self-management is crucial for glycemic control and the prevention of complications [13]. Hope plays an important role in disease progression and serves as a positive factor influencing both the quality of life and the prognosis of diabetic patients. Snyder's theory of hope posits that hope is a theoretical framework based on an intrinsic sense of success and positive motivational states, centered on goals and structured through the interaction of motivational and pathways thinking [14,15].

4.1. Nursing interventions based on Snyder's theory of hope increase the level of hope in diabetic patients

The results of this study revealed that the level of hope in both the experimental and control groups increased after the intervention, which is consistent with the findings of Wei [16]. Analysis of the underlying reasons includes the following points:

(1) Clear goals were set: Individualized self-management behavioral education goals for diabetic patients were discussed and formulated with patients and their families. These goals were adjusted as needed based on the changes in the patient's conditions, ensuring that they met the evolving needs of the patients

while also tailoring interventions to their specific circumstances. Compared with conventional nursing models, the involvement of patients in goal development improved their self-management abilities, enhanced communication with nurses, and reinforced the perception that the hospital was oriented toward meeting patients' needs. The hospital's primary focus on disease prevention and health maintenance further contributed to the patients' engagement.

(2) Application of "path thinking": Different intervention methods were adopted based on the characteristics of the teaching material, objectives, and content. For example, cognitive interventions included lectures and case studies, emotional interventions involved personal experiences and shared stories, while motor skill training utilized demonstrations, mind maps, and short videos. This multifaceted approach aimed to improve adherence to treatment and enhance the self-management outcomes for diabetic patients.

(3) Hope intervention through "motivational thinking": Motivational thinking was integrated throughout the self-management process, encouraging active participation from both patients and their families. Timely motivational interventions helped patients adjust their mindset, integrate into society, and bolster their confidence and motivation to achieve their goals. In conclusion, interventions based on Snyder's hope theory effectively enhanced the level of hope in diabetic patients.

4.2. Nursing interventions based on Snyder's theory of hope improve self-efficacy in diabetic patients

Self-efficacy is a key determinant of self-management behavior in diabetic patients [17]. This study demonstrated that, prior to the intervention, the self-efficacy of patients in both groups was low. However, after the systematic intervention, the self-efficacy scores of patients in both the control and experimental groups increased, with a significantly greater improvement in the experimental group ($P < 0.05$). The difference in self-efficacy between the experimental and control groups after the intervention was statistically significant ($P < 0.05$), aligning with findings from related studies [18,19]. The underlying causes of these improvements can be attributed to the following factors:

(1) Humanistic and personalized care: The nursing interventions, based on Snyder's hope theory, emphasized humanistic care and provided individualized support, which helped patients navigate frustration and enhance their confidence in overcoming the disease. This increased both their hope levels and self-efficacy.

(2) Empowering patients: Patients with higher self-efficacy are better able to perceive their disease management systems, face challenges with a positive mindset, and adopt behaviors conducive to health. As a result, they are more likely to engage in self-management practices [11]. By improving self-efficacy, patients were better equipped to cope with challenges in disease management, leading to better blood glucose control.

4.3. Nursing interventions based on Snyder's theory of hope improve self-management of diabetic patients

Self-management is a critical factor in the prognosis of diabetic patients [17]. The results of this study showed that self-management behavior was initially low in both groups, but after the intervention, self-management behavior improved in both the control and experimental groups. The experimental group demonstrated significantly greater improvement ($P < 0.05$), with a statistically significant difference between the experimental and control groups after the intervention ($P < 0.05$), consistent with findings from similar studies [18,19]. The causes for these

improvements include:

(1) Cognitive bias correction: Nursing interventions based on Snyder's theory of hope helped correct patients' cognitive biases, enabling them to master self-management techniques and reduce the negative impact of the disease on their hope levels. Patients with negative emotions, such as tension, anxiety, and pessimism, often experience increased blood glucose levels, complications, and higher medical costs [20,21]. Hope interventions, such as sharing successful cases of glycemic control and inviting patients with good glycemic control to share their experiences, helped reinforce patients' belief in their ability to achieve their goals.

(2) Encouragement and motivation: Peer support and positive feedback for physical activity improved both physical function and emotional well-being, fostering positive expectations for the future. This, in turn, stimulated intrinsic motivation for self-management, enhancing patients' ability to engage in self-care behaviors.

(3) Timely adjustments: After implementing hope interventions, timely adjustments were made based on changes in the patient's condition. These adjustments not only helped control blood glucose levels and delay complications but also encouraged patients to actively seek out self-management methods. The provision of personalized, safe, reasonable, and effective long-term guidance made patients feel that the hospital was genuinely focused on their needs, aiming to prevent disease, maintain health, and improve quality of life.

5. Conclusion

In summary, applying Snyder's hope theory to the self-management of diabetic patients facilitates improvements in their hope levels, self-efficacy, and self-management behaviors, ultimately helping to maintain blood glucose levels within the normal range. The findings from this study have a positive impact on the prevention of complications in diabetic patients and provide valuable evidence for clinical practice.

Disclosure statement

The authors declare no conflict of interest.

References

[1] International Diabetes Federation, 2021, IDF Diabetes Atlas, 10th Edition.

[2] Laxy M, Mielck A, Hunger M, et al., 2014, The Association Between Patient-Reported Self-Management Behavior, Intermediate Clinical Outcomes, and Mortality in Patients with Type 2 Diabetes: Results from the KORA-A Study. Diabetes Care, 37(6): 1604–1612. https://doi.org/10.2337/dc13-2533

[3] Kent D, D'Eramo Melkus G, Stuart PM, et al., 2013, Reducing the Risks of Diabetes Complications Through Diabetes Self-Management Education and Support. Popul Health Manag, 16(2): 74–81. https://doi.org/10.1089/pop.2012.0020

[4] Chen X, Bu X, Wang C, et al., 2014, A Study on the Correlation Between Self-Management Level and Diabetic Retinopathy in Community-Based Type 2 Diabetes Mellitus Patients. Journal of Community Medicine, 12(14): 26–29.

[5] Mehravar F, Mansournia MA, Holakouie-Naieni K, et al., 2016, Associations Between Diabetes Self-Management and Microvascular Complications in Patients with Type 2 Diabetes. Epidemiol Health, 38: e2016004. https://doi.

org/10.4178/epih/e2016004

[6] Khanna A, Bush AL, Swint JM, et al., 2012, Hemoglobin A1c Improvements and Better Diabetes-Specific Quality of Life Among Participants Completing Diabetes Self-Management Programs: A Nested Cohort Study. Health Qual Life Outcomes, 10: 48. https://doi.org/10.1186/1477-7525-10-48

[7] Lin K, Yang X, Yin G, et al., 2016, Diabetes Self-Care Activities and Health-Related Quality-of-Life of individuals with Type 1 Diabetes Mellitus in Shantou, China. J Int Med Res, 44(1): 147–156. https://doi.org/10.1177/0300060515597933

[8] Ma Q, Jing K, Liu Y, 2019, Research on the Construction of Structural Equation Model of Health Beliefs Affecting Self-Management Behavior of Diabetic Patients. Nursing Research, 33(24): 4294–4298.

[9] Liu M, Huang X, 2013, Hope: A Review of Research in Psychology. Advances in Psychological Science, 21(3): 548–560.

[10] Li C, Ji K, Liu Y, et al., 2018, Sinicization of Diabetes Self-Management Scale and Evaluation of Confidence Calibration. Modern Preventive Medicine, 45(24): 4477–4481.

[11] Zhao H, Wang J, 2000, Social Support and Hope for Hemodialysis Patients. Chinese Journal of Nursing, 2000(5): 49–51.

[12] Zhang JX, Schwarzer R, 1995, Measuring Optimistic Self-Beliefs: A Chinese Adaptation of the General Self-Efficacy Seale. Psychologia, 38(3): 174–181.

[13] Zhou X, Xiao X, 2022, How to Create a Diabetes Chronic Disease Management Model with Chinese Characteristics. Chinese Journal of Diabetes, 2022(9): 877–880.

[14] Lange E, Kucharski D, Svedlund S, et al., 2019, Effects of Aerobic and Resistance Exercise in Older Adults With Rheumatoid Arthritis: A Randomized Controlled Trial. Arthritis Care Res (Hoboken), 71(1): 61–70. https://doi.org/10.1002/acr.23589

[15] Williams MA, Srikesavan C, Heine PJ, et al., 2018, Exercise for Rheumatoid Arthritis of the Hand. Cochrane Database Syst Rev, 7(7): CD003832. https://doi.org/10.1002/14651858.CD003832.pub3

[16] Wei Z, Wang W, 2010, Current Status of the Application of Hope Theory in Nursing Practice. Chinese Journal of Practical Nursing, 2010(10): 46–48.

[17] Diabetology Committee of Chinese Society of Research Hospitals, Shenzhen Diabetes Prevention and Control Center, 2022, Expert Consensus on Self-Management Education and Support for Adults with Type 2 Diabetes Mellitus in Primary Care. Chinese Journal of Diabetes, 2022(4): 307–315.

[18] Shi Y, Deng JN, Chen Y, et al., 2017, Evaluation of the Effectiveness of Snyder's Hope Theory Model in Chronic Kidney Disease Management. Journal of Nursing Management, 17(4): 283–286.

[19] Liu X, Huang T, 2020, Effects of Snyder's Hope Theory Model on Self-Perceived Burden and Hope Level in Patients with Diabetic Nephropathy. General Practice Nursing, 18(5): 585–588.

[20] Shi R, Guo X, Zhang Q, 2021, Current Status and Prospects of Self-Management Education and Support for Adults with Type 2 Diabetes in China. Chinese Journal of Diabetes, 2021(2): 121–124.

[21] Liu T, Wei W, 2021, Analysis of Key Behavioral Status and Influencing Factors of Self-Management of Type 2 Diabetes Mellitus in the Community. China Health Education, 37(8): 714–717.