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Risk perception level of chronic kidney disease and related factors in patients with type 2 diabetes mellitus

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Abstract: **Objective** To explore the risk perception level of chronic kidney disease (CKD) and its related factors in patients with type 2 diabetes mellitus (T2DM), so as to enhance their awareness of CKD prevention and control. **Methods** A retrospective analysis was conducted on 430 T2DM patients admitted to People's Hospital of Xinjiang Uygur Autonomous Region from December 2023 to May 2024. Perception of Risk of Chronic Kidney Disease Scale (PRCKDS) was used to investigate the CKD risk perception level in T2DM patients, general information questionnaire was used to investigate patients' general information, Summary of Diabetes Self-Care Activities (SDSCA) was used to investigate their self-management ability, and Connor-Davidson Resilience scale (CD-RISC) was used to investigate their resilience level. The CKD risk perception levels of T2DM patients with different general information, self-management abilities, and psychological resilience levels were compared, and the related factors of CKD risk perception in T2DM patients were analyzed through multiple linear regression analysis. **Results** The effective response rate of the survey questionnaire was 95.56%, and the CKD risk perception score of T2DM patients was (86.83 ± 18.20) points. The results of multiple linear regression analysis showed that age, education level, attitude towards treatment, education about diabetes and resilience were the factors influencing T2DM patients' CKD risk perception ($t=16.271, 21.781, 7.697, 5.800, 2.840, P<0.005$). **Conclusion** The CKD risk perception level of patients with T2DM still needs to be improved. Medical staff can pay attention to the risk factors according to the patient's situation, so as to improve the CKD risk perception level of patients. **Keywords:** Type 2 diabetes mellitus; Chronic kidney disease; Risk perception; Psychological resilience; Self-management ability **Fund program:** Natural Science Foundation of Xinjiang Uygur Autonomous Region (2019D01C151)

As of 2019, there were nearly 470 million people globally living with diabetes, and it is projected that this number will reach 785 million by 2045. China accounts for one-quarter of the world's diabetes cases, ranking first globally, with more than 90% of these being type 2 diabetes mellitus (T2DM) patients [1]. Chronic kidney disease (CKD) is a common and severe microvascular complication of T2DM, with nearly 40% of T2DM patients in China affected by CKD. Early-stage CKD is often asymptomatic, and by the time of diagnosis, most patients have already progressed to end-stage kidney disease, which is associated with multiple complications and high mortality rates [2]. Therefore, it is essential for diabetes patients to undergo early CKD screening and prevention to identify risk factors at an early stage [3]. The risk factors for CKD in diabetic patients are not only related to the disease itself but also to the patient's perception of the disease and their awareness of self-management and prevention [4]. Studies have found that when chronic disease patients have an accurate and positive perception of their risks, it is beneficial for preventing and managing the disease and its complications, as well as improving prognosis [5]. In recent years, there has been increasing attention to the relationship between disease risk perception and personal prevention and control [6]. This study retrospectively analyzed the clinical data of 430 T2DM patients to explore the level of CKD risk perception and related factors.

1 Materials and Methods

1.1 General Information

A retrospective analysis was conducted on the clinical data of 430 T2DM patients admitted to the People's Hospital of Xinjiang Uygur Autonomous Region from December 2023 to May 2024. Inclusion criteria: (1) patients meeting the T2DM diagnostic criteria in the *China Type 2 Diabetes Prevention and Control Guidelines (2020 edition)* [7]; (2) age ≥ 18 years; (3) no diagnosis of CKD. Exclusion criteria: (1) other types of diabetes; (2) presence of acute complications; (3) comorbid mental disorders.

1.2 Methods

1.2.1 General Information Survey

A self-designed questionnaire was used to collect data on age, gender, education level, family monthly income, healthcare payment methods, diabetes duration, presence of chronic complications, acute complications in the past year, treatment attitude, diabetes education received, and sources of education. Treatment attitude was assessed using the Medical Coping Style Questionnaire [8], with coping styles categorized as confronting, avoiding, and yielding, corresponding to optimistic, pessimistic, and indifferent attitudes, respectively. The Cronbach's α for the pre-survey was 0.761.

1.2.2 Risk Perception Level

The CKD risk perception level in T2DM patients was assessed using the T2DM Patients' CKD Risk Perception Scale [9]. The scale consists of five dimensions: susceptibility (10 items), benefits (6 items), severity (5

items), barriers (9 items), and triggers (6 items), totaling 36 items. A 4-point Likert scale was used, with scores ranging from 1 to 4 based on agreement from strongly disagree to strongly agree. The total score is 144, with higher scores indicating a higher level of CKD risk perception. The Cronbach's α for the pre-survey was 0.875, and the split-half reliability was 0.865.

1.2.3 Self-Management Ability

Self-management ability was assessed using the Summary of Diabetes Self-Care Activities (SDSCA) [10], which includes four dimensions: diet, exercise, blood glucose monitoring, and foot care, with a total of 28 items. Scores greater than 23, between 17 and 23, and less than 17 indicate good, average, and poor self-management abilities, respectively. The Cronbach's α for the pre-survey was 0.918, and the test-retest reliability was 0.854.

1.2.4 Psychological Resilience

Psychological resilience was assessed using the Chinese version of the Connor-Davidson Resilience Scale (CD-RISC) [11]. The scale includes three dimensions and uses a 5-point scale ranging from "never" to "always," with scores ranging from 0 to 4 for each item, totaling 100 points. Scores below 45, between 45 and 65, and above 65 represent low, medium, and high levels of psychological resilience, respectively. The Cronbach's α for the pre-survey was 0.945, and the test-retest reliability was 0.830.

1.3 Quality Control

All survey team members underwent relevant training and passed assessments. Consent was obtained from the hospital departments and patients. The current status survey method was used, and strict inclusion and exclusion criteria were followed when selecting survey subjects. Participants were informed of the purpose and significance of the survey, and any questions regarding the questionnaire were addressed to avoid any interference, ensuring the accuracy of the survey results. The completed questionnaires were immediately collected, and their completeness was checked to ensure confidentiality.

1.4 Statistical Methods

Data were analyzed using SPSS 26.0 software. Normally distributed continuous data were expressed as $\bar{x} \pm s$ and analyzed using t -tests. For comparisons among multiple groups, analysis of variance (ANOVA) was used. Multivariate linear regression analysis was employed to explore the factors related to CKD risk perception in T2DM patients. All tests were two-sided, with a significance level of $\alpha = 0.05$.

2 Results

2.1 Questionnaire Collection

A total of 450 questionnaires were distributed, and 430 valid responses were collected, with an effective response rate of 95.56%.

2.2 Risk Perception Level

The CKD risk perception score of 430 T2DM patients was (86.83 ± 18.20) points. The scores for the different dimensions were as follows: susceptibility (28.19 ± 4.37) points, benefits (12.38 ± 3.67) points, severity (8.85 ± 2.16) points, barriers (24.28 ± 5.02) points, and triggers (11.14 ± 2.26) points.

2.3 Analysis of Factors Associated with CKD Risk Perception in T2DM Patients

No significant differences were found in CKD risk perception scores between different genders, monthly family income, healthcare payment methods, diabetes duration, presence of chronic complications, or presence of acute complications in the past year ($P > 0.05$). However, significant differences were observed in CKD risk perception scores between patients with different ages, educational levels, treatment attitudes, diabetes education, self-management abilities, and psychological resilience ($P < 0.05$). See **Table 1**.

Tab.1 Analysis of factors related to risk perception of CKD in patients with T2DM (point, $\bar{x} \pm s$)

Indicators	Cases	risk perception	t/F value	P value
Gender				
Male	285	85.65±18.01	1.885	0.060
Female	145	89.15±18.57		
Age				
18-35 years old	50	57.44±8.57	28.490	<0.001
36-59 years old	146	107.08±10.05		
≥ 60 years old	234	80.49±7.41		
educational level				
Primary school and below	116	65.14±8.41	31.798	<0.001
Middle school	157	83.70±4.38		
High school/vocational school	83	98.02±3.92		
College degree or above	74	114.95±7.95		
Monthly household income				
<4k yuan	53	87.91±15.54	0.147	0.932
4k-8k yuan	132	86.08±19.40		
8k-12k yuan	198	87.07±19.33		
>12k yuan	47	86.71±13.07		
Payment method				
At one's own expense	37	88.61±16.28	1.283	0.278
Medical insurance	330	86.07±18.03		
Other	63	89.77±20.22		
Course of diabetes				
<5 years	287	86.14±17.21	1.040	0.354
5-10 years	92	89.26±19.76		
>10 years	51	86.33±20.96		
Chronic complications				
Yes	127	87.14±15.34	0.227	0.820
No	303	86.70±19.40		
Acute complications in the past year				
Yes	84	88.27±16.28	0.807	0.420
No	346	86.48±18.67		
Treatment attitude				
Optimistic	101	111.62±8.78	31.356	<0.001
Numb	113	64.85±8.33		
Pessimistic	216	86.75±6.77		
Receive diabetes education				
Yes	212	101.51±17.80	27.200	<0.001
No	218	72.56±10.19		
Self-management ability				
Good	116	110.00±9.22	29.799	<0.001
Average	151	88.30±4.89		
Poor	163	68.99±9.35		
Psychological resilience				
Tall	127	108.88±9.53	29.173	<0.001
Moderate	138	87.71±4.34		
Low	165	69.13±9.39		

2.4 Multivariate Linear Regression Analysis of Factors Influencing CKD Risk Perception in T2DM Patients

A multivariate linear regression analysis was conducted with CKD risk perception level as the dependent variable, and age, education level, treatment attitude, diabetes education, self-management ability, and psychological resilience as independent variables (those with statistically significant differences in univariate analysis). The results showed that age, education level, treatment attitude, diabetes education ($P<0.05$), and psychological resilience were significant factors influencing CKD risk perception in T2DM patients

($P>0.05$). Collinearity diagnostics indicated that VIF values were all < 3 . See **Table 2** and **Table 3**.

Tab.2 Assignment of independent variables

Independent Variable	Assignment
Age	18-35 years=1, 36-59 years=2, ≥ 60 years=3
Educational Level	Primary school and below=1, Junior high school=2, High school/vocational school=3, College degree or above=4
Treatment Attitude	Optimistic=1, Numb=2, Pessimistic=3
Receive Diabetes Education	No=0, Yes=1
Self-Management Ability	Good=1, Average=2, Poor=3
Psychological Resilience	Low=1, Moderate=2, High=3

Tab. 3 Multiple linear regression analysis of influencing factors for risk perception of CKD in T2DM patients

Variable	B	SE	Standardized Coefficients beta	t value	P value	Collinearity diagnostics	
						Tolerance	VIF
Constant	30.343	1.363		22.255	<0.001		
Age	6.179	0.380	0.235	16.271	<0.001	0.707	1.414
Educational Level	10.782	0.495	0.616	21.781	<0.001	0.184	2.434
Diabetes Education	4.704	0.811	0.129	5.800	<0.001	0.296	3.378
Treatment Attitude	2.766	0.359	0.124	7.697	<0.001	0.566	1.766
Self-Management Ability	1.288	1.399	0.057	0.920	0.358	0.038	2.610
Psychological Resilience	3.921	1.381	0.177	2.840	0.005	0.038	2.278

3 Conclusion

T2DM patients, as a common clinical chronic disease, require long-term treatment. More importantly, they need to engage in self-management, control their diet, take medications on time, monitor blood glucose levels, and pay attention to risk factors to prevent complications [1]. Research shows that only about 9% of patients recognize diabetes as a risk factor for CKD, and only about 20% of CKD patients undergo regular urine tests. Most diabetes patients have poor self-management abilities, making them more prone to complications [12]. CKD is a common complication of T2DM, with early stages showing mild albuminuria. By the time significant albuminuria or obvious symptoms appear, the disease has often progressed to advanced stages, leading to renal failure and a high mortality rate [13]. Therefore, early detection of risk factors is an effective measure to prevent CKD. Studies have shown that a high level of risk perception can encourage people to adopt protective behaviors, and correct risk perception enables patients to choose appropriate treatment, thus reducing the harm caused by the disease [14]. Currently, risk perception has been extensively studied in fields such as consumption and disaster response, but there is limited research on the risk perception of CKD among T2DM patients. Therefore, this study investigates the risk perception level and influencing factors of CKD in T2DM patients.

The results of this study show that the CKD risk perception score of T2DM patients is (86.83 ± 18.20) points, which is at a moderately low level. The reason for this may be that fewer T2DM patients receive diabetes education, and their knowledge of diabetes is relatively insufficient. In this study, 63.49% of the patients had a high school education or below, and 54.42% were aged 60 or older.

This suggests that patients with lower education levels and older ages may have lower capacity to absorb knowledge about diabetes and insufficient understanding. Therefore, healthcare professionals should correctly assess the CKD risk perception level of T2DM patients and provide appropriate health education according to the patient's condition, along with developing scientifically sound health interventions [15].

Multivariate linear regression analysis of the factors influencing CKD risk perception in T2DM patients revealed that age, education level, treatment attitude, diabetes education, and psychological resilience all influence the CKD risk perception level. Collinearity diagnostics indicated that VIF values were all >3 , suggesting no multicollinearity. Compared to patients aged 18–35 years and those aged ≥ 60 years, patients aged 36–59 years had higher risk perception levels. This may be because patients in this age group face multiple pressures and responsibilities from family and society, hoping to reduce the incidence of CKD through effective preventive measures [16]. Patients with higher education levels had higher risk perception scores, likely because they have a greater awareness of disease safety, actively seek out information about T2DM, and can evaluate the accuracy of information, thereby adopting healthy behaviors [17]. Patients with an optimistic treatment attitude are more willing to cooperate with healthcare providers, take medications on time, and follow appropriate dietary and exercise plans while avoiding risk factors to reduce CKD occurrence [18]. Patients who receive diabetes education have a better understanding of T2DM-related knowledge and are aware of the risks of CKD. This enhances their self-protection awareness and improves their risk perception level [19]. Psychological resilience refers to an individual's mental response when facing external

pressures. It can effectively reduce the impact of negative events, help individuals release stress, and have a positive effect on physical and mental health and quality of life [20]. The results of this study show that patients with higher psychological resilience had higher risk perception levels, which is consistent with previous reports, indicating that individuals with high psychological resilience have stronger adaptability and can better cope with various stresses and setbacks, thus alleviating negative emotions and maintaining a higher level of risk perception [21].

In conclusion, T2DM patients' CKD risk perception is at a moderate level. Age, education level, treatment attitude, diabetes education, and psychological resilience are all related to CKD risk perception in T2DM patients. Therefore, healthcare professionals should provide health education during the treatment of T2DM patients, with a focus on those with lower education levels, poor treatment attitudes, and low psychological resilience. This study is a single-center study, and further multi-center research on the influencing factors of CKD risk perception in T2DM patients is needed.

Conflict of Interest None

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· 论 著 ·

2 型糖尿病患者慢性肾脏病风险感知水平 及相关因素

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摘要: **目的** 探讨 2 型糖尿病(T2DM)患者慢性肾脏病(CKD)风险感知水平及相关因素,增强患者对 CKD 的防控意识。**方法** 回顾性分析新疆维吾尔自治区人民医院 2023 年 12 月至 2024 年 5 月收治的 430 例 T2DM 患者的临床资料,采用 T2DM 患者慢性肾脏病风险感知量表(PRCKDS)调查其 CKD 风险感知水平,采用一般资料调查问卷调查患者一般资料,采用糖尿病自我管理行为量表(SOSCA)调查其自我管理能力,采用中文版心理弹性量表(CD-RISC)调查其心理弹性水平。比较不同一般资料、自我管理能力、心理弹性水平的 T2DM 患者的 CKD 风险感知水平,多元线性回归分析 T2DM 患者 CKD 风险感知的相关因素。**结果** 调查问卷有效回收率为 95.56%,T2DM 患者 CKD 风险感知评分为(86.83±18.20)分;多元线性回归分析结果显示,年龄、文化程度、治疗态度、接受糖尿病教育和心理弹性均是 T2DM 患者 CKD 风险感知的影响因素($t=16.271, 21.781, 7.697, 5.800, 2.840, P<0.05$)。**结论** T2DM 患者 CKD 风险感知水平仍需提高,医护人员可根据患者的情况注意其风险因素,以此来提高患者 CKD 的风险感知水平。

关键词: 2 型糖尿病; 慢性肾脏病; 风险感知; 心理弹性; 自我管理能力

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Risk perception level of chronic kidney disease and related factors in patients with type 2 diabetes mellitus

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Abstract: **Objective** To explore the risk perception level of chronic kidney disease (CKD) and its related factors in patients with type 2 diabetes mellitus (T2DM), so as to enhance their awareness of CKD prevention and control. **Methods** A retrospective analysis was conducted on 430 T2DM patients admitted to People's Hospital of Xinjiang Uygur Autonomous Region from December 2023 to May 2024. Perception of Risk of Chronic Kidney Disease Scale (PRCKDS) was used to investigate the CKD risk perception level in T2DM patients, general information questionnaire was used to investigate patients' general information, Summary of Diabetes Self-Care Activities (SDSCA) was used to investigate their self-management ability, and Connor-Davidson Resilience Scale (CD-RISC) was used to investigate their psychological resilience level. The CKD risk perception levels of T2DM patients with different general information, self-management abilities, and psychological resilience levels were compared, and the related factors of CKD risk perception in T2DM patients were analyzed through multiple linear regression analysis. **Results** The effective response rate of the survey questionnaire was 95.56%, and the CKD risk perception score of T2DM patients was (86.83 ± 18.20) points. The results of multiple linear regression analysis showed that age, education level, attitude towards treatment,

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education about diabetes and psychological resilience were the factors influencing T2DM patients' CKD risk perception ($t=16.271, 21.781, 7.697, 5.800, 2.840, P<0.05$). **Conclusion** The CKD risk perception level of patients with T2DM still needs to be improved. Medical staff can pay attention to the risk factors according to the patient's situation, so as to improve the CKD risk perception level of patients.

Keywords: Type 2 diabetes mellitus; Chronic kidney disease; Risk perception; Psychological resilience; Self-management ability

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截至2019年,全球共有近4.7亿糖尿病患者,预计到2045年糖尿病患者数量将达到7.85亿,而我国糖尿病患者数量占全世界的1/4,居世界首位,其中2型糖尿病(type 2 diabetes mellitus, T2DM)患者占90%以上^[1]。慢性肾脏病(chronic kidney disease, CKD)是T2DM常见且严重的微血管并发症,我国T2DM患者中近40%患有CKD。CKD早期无明显特征,确诊时患者多已进入终末期,且并发症多、死亡率高^[2],因此糖尿病患者应尽早进行CKD筛查和预防,及早发现其风险因素^[3]。糖尿病患者伴有CKD的风险因素不仅与疾病本身有关,还与患者对疾病的风险感知、自身防控意识等有关^[4]。研究发现,当慢性病患者对疾病拥有准确且积极的风险感知时,有利于对疾病及其并发症的防控、根治和预后^[5]。近年来,疾病风险感知与个人防控之间的关系越来越受到重视^[6]。本文回顾性分析430例T2DM患者的临床资料,探讨CKD风险感知水平及相关因素。

1 资料与方法

1.1 一般资料 回顾性分析新疆维吾尔自治区人民医院2023年12月至2024年5月收治的430例T2DM患者的临床资料。纳入标准:(1)符合《中国2型糖尿病防治指南(2020年版)》^[7]中T2DM诊断标准;(2)年龄 ≥ 18 岁;(3)未被诊断CKD。排除标准:(1)其他类型糖尿病;(2)存在急性并发症;(3)合并精神疾病。

1.2 方法

1.2.1 一般资料调查问卷 使用自制的调查问卷包括年龄、性别、文化程度、家庭月收入、医疗费用支付方式、糖尿病病程、有无慢性并发症、最近1年有无急性并发症、治疗态度、是否接受糖尿病教育、接受糖尿病教育内容和渠道;其中治疗态度使用医学应对方式量表^[8]来评价,面对、回避和屈服分别对应乐观、悲观和无感觉;预调查量表的Cronbach's $\alpha=0.761$ 。

1.2.2 风险感知水平 使用T2DM患者CKD风险感知量表^[9]统计患者风险感知水平,量表包括易感性(10个条目)、有益性(6个条目)、严重性(5个条

目)、障碍性(9个条目)、促发因素(6个条目)等5个维度,共36个条目;按Likert 4级评分,根据其完全不同意至完全同意程度分别赋予1~4分,总分144分,分数越高说明T2DM患者对于CKD的风险感知水平越高。预调查量表的Cronbach's $\alpha=0.875$,分半信度为0.865。

1.2.3 自我管理能力 使用糖尿病自我管理行为量表^[10](Summary of Diabetes Self-Care Activities, SDSCA)评估患者的自我管理行为,量表包括饮食、运动、血糖监测等4个维度,共28分,分数 > 23 分、17~23分、 < 17 分分别表示自我管理能力较好、一般、较差。预调查量表的Cronbach's α 系数=0.918,重测信度为0.854。

1.2.4 心理弹性 使用中文版心理弹性量表(Connor-Davidson Resilience Scale, CD-RISC)^[11]评估患者心理弹性水平,量表有3个维度,采用5级评分,按从不~总是5个程度分别赋予0~4分,共100分;分数 < 45 分、45~65分、 > 65 分分别表示心理弹性处于低、中、高水平。预调查量表的Cronbach's $\alpha=0.945$,重测信度为0.830。

1.3 质量控制 调查小组成员均进行相应培训并通过考核,调查获得医院相应科室、患者等同意。采用现况调查法,严格遵守纳入与排除标准选取调查对象,应告知调查对象此次调查的目的及意义,并对问卷疑问处予以解释,避免调查对象受到干扰,确保调查结果的准确性。问卷填写完毕立即收回,并检查填写的完整性,并严格保密。

1.4 统计学方法 采用SPSS 26.0统计软件进行数据分析。计量资料符合正态分布用 $\bar{x}\pm s$ 表示,使用 t 检验,多组间比较采用方差分析;使用多元线性回归分析T2DM患者CKD风险感知相关因素。均采用双侧检验,检验水准 $\alpha=0.05$ 。

2 结果

2.1 调查问卷回收情况 共发放问卷450份,有效回收问卷430份,有效回收率95.56%。

2.2 风险感知水平 430 例 T2DM 患者 CKD 风险感知评分为(86.83±18.20)分。其中易感性(28.19±4.37)分,有益性(12.38±3.67)分,严重性(8.85±2.16)分,障碍性(24.28±5.02)分,促发因素(11.14±2.26)分。

2.3 T2DM 患者 CKD 风险感知相关因素分析 不同性别、家庭月收入、医疗费用支付方式、糖尿病病程、有无慢性并发症、最近 1 年有无急性并发症患者 CKD 风险感知评分比较,差异无统计学意义($P>0.05$);不同年龄、文化程度、治疗态度、是否接受糖尿病教育、自我管理能力和心理弹性患者 CKD 风险感知评分比较,差异有统计学意义($P<0.05$)。见表 1。

表 1 T2DM 患者 CKD 风险感知相关因素分析 (分, $\bar{x}\pm s$)
Tab.1 Analysis of factors related to risk perception of CKD in patients with T2DM (piont, $\bar{x}\pm s$)

项目	例数	风险感知评分	t/F 值	P 值
性别			1.885	0.060
男	285	85.65±18.01		
女	145	89.15±18.57		
年龄			773.605	<0.001
18~35 岁	50	57.44±8.57		
36~59 岁	146	107.08±10.05		
≥60 岁	234	80.49±7.41		
文化程度			774.687	<0.001
小学及以下	116	65.14±8.41		
初中	157	83.70±4.38		
高中/中专	83	98.02±3.92		
大专及以上	74	114.95±7.95		
家庭月收入			0.147	0.932
<4 000 元	53	87.91±15.54		
4 000~<8 000 元	132	86.08±19.40		
8 000~12 000 元	198	87.07±19.33		
>12 000 元	47	86.71±13.07		
医疗费用支付方式			1.283	0.278
自费	37	88.61±16.28		
医保	330	86.07±18.03		
其他	63	89.77±20.22		
糖尿病病程			1.040	0.354
<5 年	287	86.14±17.21		
5~10 年	92	89.26±19.76		
>10 年	51	86.33±20.96		
慢性并发症			0.227	0.820
有	127	87.14±15.34		
无	303	86.70±19.40		
最近 1 年急性并发症			0.807	0.420
有	84	88.27±16.28		
无	346	86.48±18.67		
治疗态度			983.148	<0.001
乐观	101	111.62±8.78		
无感觉	113	64.85±8.33		
悲观	216	86.75±6.77		
接受糖尿病教育			20.622	<0.001
是	212	101.51±17.80		
否	218	72.56±10.19		
自我管理能力和心理弹性			887.951	<0.001
较好	116	110.00±9.22		
一般	151	88.30±4.89		
差	163	68.99±9.35		
心理弹性			851.083	<0.001
高	127	108.88±9.53		
中	138	87.71±4.34		
低	165	69.13±9.39		

2.4 T2DM 患者 CKD 风险感知影响因素多元线性回归分析 以 CKD 风险感知水平为因变量,以单因素分析差异有统计学意义的年龄、文化程度、治疗态度、接受糖尿病教育、自我管理能力和心理弹性为自变量做多元线性回归分析,结果显示:年龄、文化程度、治疗态度、糖尿病教育、心理弹性均是 T2DM 患者 CKD 风险感知的影响因素($P<0.05$),自我管理能力和心理弹性未进入回归模型($P>0.05$),共线性诊断显示方差膨胀系数(variance inflation factor,VIF)均<3。见表 2、表 3。

表 2 自变量赋值情况
Tab.2 Assignment of independent variables

自变量	赋值
年龄	18~35 岁=1,36~59 岁=2,≥60 岁=3
文化程度	小学及以下=1,初中=2,高中/中专=3,大专及以上=4
治疗态度	悲观=1,无感觉=2,乐观=3
接受糖尿病教育	否=0,是=1
自我管理能力和心理弹性	差=1,一般=2,较好=3
心理弹性	低=1,中=2,高=3

表 3 T2DM 患者 CKD 风险感知影响因素多元线性回归分析
Tab.3 Multiple linear regression analysis of influencing factors for risk perception of CKD in T2DM patients

变量	回归系数	标准误	标准化回归系数	t 值	P 值	共线性诊断容差	VIF
常量	30.343	1.363		22.255	<0.001		
年龄	6.179	0.380	0.235	16.271	<0.001	0.707	1.414
文化程度	10.782	0.495	0.616	21.781	<0.001	0.184	2.434
接受糖尿病教育	4.704	0.811	0.129	5.800	<0.001	0.296	2.378
治疗态度	2.766	0.359	0.124	7.697	<0.001	0.566	1.766
自我管理能力和心理弹性	1.288	1.399	0.057	0.920	0.358	0.038	2.610
心理弹性	3.921	1.381	0.177	2.840	0.005	0.038	2.278

3 讨论

T2DM 患者作为临床常见慢性病,需要长期治疗,更需要患者进行自我管理、控制饮食、按时服药并进行血糖检测、注意危险因素等,以预防并发症的发生^[1]。研究显示,只有近 9% 的患者将糖尿病视为 CKD 的危险因素,仅约 20% 的 CKD 患者定期进行尿常规检测,大多数糖尿病患者的自我管理能力和心理弹性较低,更易发生并发症^[12]。CKD 是 T2DM 常见的一种并发症,患者早期尿液中含有轻微白蛋白;当出现大量白蛋白尿或具有明显症状时,往往已进入中晚期,最终导致肾衰竭,死亡率极高^[13],故尽早发现其危险因素是预防 CKD 的有效措施。研究发现,高水平的风险感知会使人们采取保护性行为,且正确的风险感知可以使患者选择合适的治疗方式,从而减少疾病带来的危害^[14]。目前,风险感知在消费、灾害等领域已有深入研究,但对 T2DM 患者 CKD 风险感知的研究报道较少,故本文对

T2DM患者CKD风险感知水平及影响因素进行研究。

本研究结果显示,T2DM患者CKD风险感知评分为(86.83±18.20)分,处于中等偏下水平。分析原因可能是T2DM患者中接受糖尿病教育者较少,且对糖尿病相关知识了解偏少。而且本研究中,初中及以下学历患者占63.49%,年龄≥60岁患者占54.42%,可能是学历偏低和老龄化患者对糖尿病相关知识接受能力较低、了解度不够,故提示医护人员应对T2DM患者CKD风险感知水平作出正确评估,并根据患者的病情状况进行合适的健康宣教,以及制定科学健康的干预措施^[15]。

对T2DM患者CKD风险感知影响因素进行多元线性回归分析,结果显示,年龄、文化程度、治疗态度、接受糖尿病教育、心理弹性均是T2DM患者CKD风险感知水平的影响因素,且共线性诊断显示VIF均<3,提示不存在多重共线性。相较于18~35岁及≥60岁患者,36~59岁患者风险感知水平较高,可能是在此年龄段的患者需承担来自家庭、社会等多方面压力与责任,希望通过有效的预防措施来减少CKD的发生^[16]。文化程度高的患者风险感知评分较高,可能因其对疾病安全意识较高,能够积极了解T2DM相关知识,并可以鉴别信息准确度,展开健康行为^[17]。治疗态度乐观的患者更愿意配合医护人员进行治疗,按时服药并制定合适的饮食计划和运动计划、避免危险因素等,以此来减少CKD的发生^[18]。而接受糖尿病教育的患者,会对T2DM相关知识更了解,并对CKD的危险性有一定认识,可加强患者的自我保护意识,提升风险感知水平^[19]。心理弹性指主体面对外界压力时心理上的反应状态,可以有效减轻负面事件产生的影响,帮助人们释放压力,并对身心健康和生活质量等产生积极影响^[20]。本研究结果显示,心理弹性高的患者风险感知水平较高,这与既往报道相符,表明心理弹性高的人群适应能力较强,能更好地面对各种压力和挫折,从而缓解负面情绪,保持较高的风险感知水平^[21]。

综上所述,T2DM患者CKD风险感知处于中等水平,年龄、文化程度、治疗态度、接受糖尿病教育和心理弹性均与T2DM患者CKD风险感知有关,故医护人员对T2DM患者进行治疗时,应予以健康宣教,并重点关注文化程度偏低、治疗态度和心理弹性差的患者。本研究为单中心研究,仍需开展对T2DM患者CKD风险感知影响因素的多中心研究。

利益冲突 无

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