

Investigation and Analysis of Elderly Inpatients with Type 2 Diabetes in Liuzhou, China

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Abstract: At present, diabetes has become a serious public health problem that is of increasing concern to countries all over the world, and diabetes has become the top five chronic diseases that affect human health including cancer, cardiovascular diseases, chronic respiratory diseases, etc. Thus, this paper investigated and analyzed the current status of elderly patients with type 2 diabetes in Liuzhou and the related influencing factors. 240 cases of elderly patients with type 2 diabetes were selected from a hospital in Liuzhou, and the patients were divided into two groups according to the HbA1c and FPG levels. The differences were compared and analyzed, and the interaction between the observed indexes and the elderly patients with type 2 diabetes was analyzed through correlation analysis and binary logistic regression. Correlation analysis and binary logistic regression were used to analyze the correlation between each observation index and HbA1c in elderly type 2 diabetes patients. The HbA1c compliance rate of 240 elderly type 2 diabetic patients included in this study reached only 29.17%, with a low level of compliance and unsatisfactory glycemic control. Diabetic patients should improve the ability of glycemic control levels to prevent complications. This paper aims to provide a reference for the management and treatment of diabetic patients, improve the level of glycemic control and quality of life of patients, and provide data support in clinical treatment.

Keywords: Diabetes mellitus type 2, Glycemic control, Influence factors, Current status survey.

1. Introduction

Diabetes mellitus (DM) is a group of metabolic diseases characterized by chronic hyperglycemia caused by multiple etiologies [1]. Typical diabetic patients are characterized by polydipsia, polyuria, polyphagia, and weight loss, according to the International Diabetes Federation (IDF) [2]. According to data released by the International Diabetes Federation (IDF) on the incidence of diabetes in China, approximately 141 million adults aged 20-79 years will develop diabetes in 2021, accounting for 10.6% of the global population in this age group. This number is projected to rise to 164 million (11.8%) by 2030 and 174 million (12.5%) by 2045. This figure is an increasing trend, and diabetes is now a serious public health problem of growing concern in countries around the world. There are many discussions on the causes of diabetes, such as daily diet, exercise and other external factors. Diabetes has become the top five chronic diseases that have a health impact on the human body after cancer, cardiovascular lesions, chronic respiratory diseases, etc., which shows that focusing on the prevention and treatment of diabetes is a crucial aspect of the overall health of the people.

Therefore, this project selects middle-aged and elderly type 2 diabetic patients in a hospital of Liuzhou as the research object for investigation and analysis of the current situation, through the collection, sorting and screening of relevant clinical data on the research object, the general situation of the characteristics of their description, to understand the distribution characteristics, and then grasp the level of control of blood glucose, blood lipids, blood pressure in the hospital, the main purpose of which is to comprehend the situation of the hospital's glycemic control as well as factors affecting glycemic control. The prime purpose is to understand the hospital's blood glucose control situation and the factors

affecting blood glucose control, to provide a basis reference for the prevention and treatment of diabetes.

2. Objects and Methods

2.1. Subject of the Study

In this study, patients with type 2 diabetes mellitus attending a hospital in Liuzhou from January 2022 to December 2022 were selected on the inpatient information system, and all patients underwent a complete clinical examination, and the results of relevant examination data were entered and saved. Inclusion criteria: ① clinically diagnosed type 2 diabetes mellitus patients; ② age ≥ 60 years old; ③ hospitalization days ≥ 5 days. Exclusion criteria: ① patients with hepatic or renal insufficiency; ② patients with acute exacerbation; ③ patients with malignant tumors and autoimmune diseases. A total of 240 cases of elderly type 2 diabetic patients, 102 male and 138 female, were collected and screened to meet the above criteria.

2.2. Research Methodology

To query and collect relevant clinical data in the hospital inpatient information system: ① check the case data, record the patient's gender, age, weight, blood pressure, disease duration, etc., of which the blood pressure, including systolic blood pressure, diastolic blood pressure; ② all the hospitalized patients have completed the relevant examination for the case data of the first biochemical examination indicators at the time of admission to the hospital, including the fasting plasma glucose (FPG), blood lipid levels, liver and kidney function, blood uric acid, and glycated hemoglobin (Hemoglobin A1C, HbA1c) and other values. Fasting Plasma Glucose (FPG), lipid levels, liver and kidney

function, blood uric acid, and glycated hemoglobin (Hemoglobin A1C, HbA1c). Lipid levels include total cholesterol (TCHO), triglyceride (TG), low-density lipoprotein cholesterol (LDL-C), and high-density lipoprotein cholesterol (HDL-C). Low-Density Lipoprotein Cholesterol (LDL-C) and High-Density Lipoprotein Cholesterol (HDL-C), liver and kidney functions including Aspartate aminotransferase (AST), Alanine aminotransferase (ALT), urinary creatinine, urinary micro-protein. The relevant clinical indexes of the patients were described, and the patients were divided into two groups according to whether HbA1c and FPG reached the standard or not. The differences between the two groups were compared and analyzed, and the correlation analysis and binary logistic regression analysis were used to further realize the correlation between the observed indexes and HbA1c of the elderly patients with type 2 diabetes mellitus, at the same time

2.3. Criteria for Control of Blood Glucose, Lipids and Blood Pressure

According to the Clinical Guidelines for the Prevention and Control of Type 2 Diabetes Mellitus in the Elderly in China, 2022 Edition [3], as well as the value range of hospital test results to determine the control standards, (1) blood glucose control: control HbA1c < 6.5 % for control of the standard, ≥ 6.5 % for the control of substandard; FPG < 7.0mmol-L⁻¹ for the control of the standard, ≥ 7.0mmol-L⁻¹ for the control of the substandard; (2) lipids control: the normal range of TCHO is 3.0-5.7mmol-L⁻¹, TG is 0.5-1.7mmol-L⁻¹, LDL 2.1-3.1mmol-L⁻¹, HDL 0.9-1.8mmol-L⁻¹; (3) blood pressure control: control of systolic blood pressure < 140mmHg is considered to be up to the standard, ≥ 140mmHg is considered to be out of standard, diastolic blood pressure < 90mmHg is considered to be up to the standard, ≥ 90mmHg is considered to be out of the standard.

2.4. Statistical Methods

In this study, Excel was used to collect and organize the

research subjects according to the inclusion and exclusion criteria, which in turn was statistically analyzed using SPSS 23.0 statistical software. The general characteristics of the measurement data obeying normal distribution were expressed in the form of mean ± standard deviation ($\bar{x} \pm s$), and independent samples t-test or ANOVA were selected for the analysis of variance, and Pearson's correlation coefficient was used for the analysis of correlation; for the measurement data obeying skewed distribution, the general characteristics of the data obeying skewed distribution were selected to be described by the median and quartile spacing, i.e., M (P25, P75), and the non-parametric test was used for the analysis of variance and correlation analysis; the general characteristics of the count data were expressed as relative numbers or constitutive ratios, and the chi-square analysis or exact probability test was used for the test of variance, and the Spearman's correlation coefficient was used for the test of correlation analysis; the regression analysis was tested by the Logistic regression model.

3. Results

3.1. Basic Information about the Research Subjects

A total of 240 elderly type 2 diabetes mellitus inpatients were enrolled in this hospital in this study, where 102 were male patients and 138 were female patients with an age range of 60-93 years, with an overall distribution of (70.05 ± 6.31) years, and a disease duration of 0-40 years with a median of 10.00 (5.00, 16.00) years. Analyzing the differences between genders in various clinical indicators of elderly type 2 diabetic inpatients, the results showed that among the elderly type 2 diabetic inpatients in this hospital, the female patients were greater than the male patients in the levels of DL and blood uric acid, while the levels of body weight, ALT, and urinary creatinine were less than those of the male patients, which has a statistically significant difference (P < 0.05). (Table 1)

Table 1. Basic profile of elderly patients with type 2 diabetes mellitus

Clinical indicator	Male	Female	t/z	P
Age	69.38 ± 6.08	70.54 ± 6.46	-1.248	0.212
Course of disease	9.5 (2,15)	10.00 (6.75, 17.00)	-1.573	0.116
Weight	68.57 ± 11.24	58.71 ± 9.03	-6.599	0.000*
Systolic blood pressure	134.10 ± 17.67	138.81 ± 19.98	-1.897	0.059
Diastolic blood pressure	76.07 ± 10.15	74.65 ± 10.39	1.054	0.293
TCHO	4.44 ± 1.12	4.50 ± 1.11	-0.410	0.682
TG	1.17 (0.80, 1.96)	1.29 (0.88, 1.72)	-0.014	0.989
LDL	2.60 (2.00, 3.33)	2.60 (2.04, 3.42)	-0.260	0.794
HDL	1.05 (0.92, 1.22)	1.16 (0.99, 1.38)	-3.107	0.002
AST	17.00 (15.00, 22.00)	16.00 (14.00, 21.00)	-1.491	0.136
ALT	17.00 (12.00, 25.25)	14.00 (11.00, 20.75)	-2.781	0.005
Urinary creatinine	8186.70 (5631.25, 111302.55)	5667.10 (4048.00, 8204.65)	-4.883	0.000*
Urine micro-protein	14.8 (5.8, 46.55)	10.05 (4.73, 29.03)	-1.584	0.113
HbA1c	7.05 (6.35, 8.73)	6.90 (6.30, 7.83)	-1.304	0.192
FPG	6.11 (5.10, 7.45)	6.03 (5.18, 7.61)	-0.287	0.774
Blood uric acid	70.00 (66.00, 75.00)	324.50 (274.75, 375.50)	-3.085	0.002

3.2. Achievement of Glycemic, Lipid, and Blood Pressure Control

Among 240 elderly hospitalized patients with type 2 diabetes mellitus, it was found that the clinical indicators with better control were TCHO, HDL, and diastolic blood pressure

in the order of 77.92 %, 79.17 %, and 90.83 %; and the clinical indicators with worse control were HbA1c, FPG, TG, LDL, and systolic blood pressure, and the rates of their attainment were 29.17 %, 66.25 %, 66.67 %, in the order of, 35.83 %, and 56.25 %. Overall, 240 cases of elderly type 2 diabetes mellitus in patients in this hospital had fair overall

control of blood pressure and lipids, while glycaemic control was poor. (Table 2)

Table 2. Glucose, lipid and blood pressure control in 240 patients (n/ %)

Control indicator	Reach a set standard	Non-performance
HbA1c	70 (29.17 %)	170 (70.83 %)
FPG	159 (66.25 %)	81 (33.75 %)
TCHO	187 (77.92 %)	53 (22.08 %)
TG	160 (66.67 %)	80 (33.33 %)
LDL	86 (35.83 %)	146 (60.83 %)
HDL	190 (79.17 %)	50 (20.83 %)
Systolic blood pressure	135 (56.25 %)	105 (43.75 %)
Diastolic blood pressure	218 (90.83 %)	22 (9.17 %)

3.3. Analysis of HbA1c Control in the Study Population

In the table above, the elderly type 2 diabetic inpatients of the hospital were divided into the standardized group and the non-standardized group according to the HbA1c value. The basic conditions of the inpatients, the clinical biochemical

indexes at the time of admission and other information were analyzed. The results yielded that the systolic blood pressure, TCHO, TG, LDL, urinary micro-protein, and FPG were higher than that of the standardized group in the non-standardized group, and the inter-group difference between the two groups existed, which was statistically significant ($P < 0.05$). (Table 3)

Table 3. Analysis of HbA1c control in elderly type 2 diabetic patients

Clinical indicator	< 6.5 %	≥ 6.5 %	t/z/c ²	P
Male	28 (29.8)	74 (72.3)		
Female	42 (40.3)	96 (97.8)	0.253	0.615
Age	69.54 ± 6.50	70.26 ± 6.24	-0.798	0.426
Course of disease	8.50 (4.00, 14.50)	10.00 (5.00, 16.25)	-1.371	0.170
Weight	62.99 ± 12.03	62.78 ± 10.75	0.117	0.907
Systolic blood pressure	131.71 ± 16.76	138.91 ± 19.70	-2.680	0.008
Diastolic blood pressure	73.57 ± 10.48	75.95 ± 10.16	-1.631	0.104
TCHO	4.15 ± 1.16	4.61 ± 1.07	-2.948	0.004
TG	1.05 (0.71, 1.53)	1.31 (0.94, 2.10)	-2.973	0.003
LDL	2.34 (1.62, 2.89)	2.68 (2.12, 3.48)	-3.279	0.001
HDL	1.17 (0.96, 1.37)	1.10 (0.94, 1.27)	-1.360	0.174
AST	16.00 (14.00, 20.00)	16.50 (14.00, 22.00)	-0.143	0.886
ALT	14.00 (12.00, 20.00)	16.00 (11.00, 23.75)	-1.351	0.177
Urinary creatinine	7196.50 (4887.60, 10640.20)	6520.60 (4773.80, 9417.00)	-0.978	0.328
Urine micro-protein	8.60 (4.30, 16.90)	13.85 (5.38, 47.08)	-3.040	0.002
FPG	5.27 (4.62, 6.05)	6.68 (5.48, 8.33)	-5.912	0.000
Blood uric acid	319.50 (284.00, 377.00)	345.50 (285.75, 407.50)	-1.670	0.095

Table 4 Analysis of FPG control in elderly patients with type 2 diabetes mellitus

Clinical indicator	< 7mmol L ⁻¹	≥ 7mmol L ⁻¹	t/z/c ²	P
Male	68 (67.6)	34 (34.4)		
Female	91 (91.4)	47 (46.6)	0.014	0.907
Age	69.57 ± 6.16	71.00 ± 6.54	-1.399	0.162
Course of disease	10.00 (4.00, 16.00)	10.00 (5.00,15.00)	-0.224	0.823
Weight	63.16 ± 11.83	62.24 ± 9.68	-0.229	0.819
Systolic blood pressure	136.35 ± 18.64	137.72 ± 20.16	-0.524	0.601
Diastolic blood pressure	75.45 ± 10.51	74.88 ± 9.90	0.405	0.686
TCHO	4.44 (3.66, 5.28)	4.31 (3.64, 4.99)	-0.604	0.546
TG	1.18 (0.86, 1.77)	1.30 (0.82, 1.86)	-0.564	0.573
LDL	2.68 (2.05, 3.46)	2.47 (1.93, 3.21)	-1.154	0.248
HDL	1.14 (0.98, 1.33)	1.09 (0.90, 1.22)	-2.176	0.030
AST	16.00 (14.00, 21.00)	17.00 (14.00, 22.00)	-0.849	0.396
ALT	16.00 (12.00, 22.00)	15.00 (11.00, 23.50)	-0.121	0.903
Urinary creatinine	6964.80 (4953.93, 10099.58)	6438.85 (4595.85, 9473.95)	-0.935	0.350
Urine micro-protein	11.90 (4.90, 35.60)	9.80 (5.15, 27.00)	-1.122	0.262
HbA1c	7.00 (6.30, 8.20)	6.90 (6.15, 7.95)	-0.901	0.368
Blood uric acid	327.00 (275.00, 398.00)	337.00 (296.00, 404.00)	-0.808	0.419

3.4. Analysis of FPG Control in the Study Population

According to the FPG of the study, whether subjects reached the standard or not, the elderly type 2 diabetic inpatients of the hospital were divided into two groups, respectively. The data of the study subjects' basic conditions, and clinical biochemical indexes at the time of admission were statistically analyzed, and the results yielded that the gender, age, duration of the disease, body weight, systolic blood pressure, diastolic blood pressure, TCHO, TG, LDL, HDL, AST, ALT, urinary creatinine, urine microprotein, HbA1c, and blood uric acid in the elderly type 2 diabetic patients at this hospital did not differ from the two groups. Protein, HbA1c, and blood uric acid were not statistically different between the two groups ($P > 0.05$). (Table 4)

3.5. Correlation Between the Clinical Indicators of the Study Population

As the findings obtained from 2.4 and 2.5 above, there were Gaps between groups differences in systolic blood pressure, TCHO, TG, LDL, urinary micro-protein, and FPG when analyzed comparatively in terms of whether or not HbA1c was up to the standard ($P < 0.05$), whereas there were no differences in any of them when analyzed in terms of whether or not FPG was up to the standard ($P > 0.05$). Therefore, the correlation between HbA1c and systolic blood pressure, TCHO, TG, LDL, urinary micro-protein, and FPG was analyzed in elderly patients with type 2 diabetes mellitus, and the results showed that there were no differences between HbA1c and TCHO ($r = 0.150$, $P < 0.05$), LDL ($r = 0.137$, $P < 0.05$), urinary micro-protein ($r = 0.186$, $P < 0.01$), FPG ($r = 0.475$, $P < 0.01$) were correlated, and all were positively correlated. (Table 5)

Table 5. Correlation analysis between clinical indicators

Clinical indicator	HbA1c	Systolic blood pressure	TCHO	TG	LDL	Urine micro-protein	FPG
HbA1c	1.000	0.073	0.150	0.057	0.137*	0.186**	0.475**
Systolic blood pressure	-	1.000	0.140*	0.171**	0.040	0.183**	-0.067
TCHO	-	-	1.000	0.350**	0.756**	0.005	0.060
TG	-	-	-	1.000	0.053	0.060	0.105
LDL	-	-	-	-	1.000	-0.031	0.019
Urine micro-protein	-	-	-	-	-	1.000	0.151*
FPG	-	-	-	-	-	-	1.000

* Significant at the 0.05 level (two-tailed); ** Significant at the 0.01 level (two-tailed).

3.6. Analysis of Factors Affecting Glycemic Control

In the study above, it was found that there were differences in other clinical indicators with the study population when grouped by HbA1c, so whether HbA1c was met or not was used as the dependent variable, and the factors that might have an impact on the patients' HbA1c were subjected to

binary logistic regression analysis, and the results of which showed that the systolic blood pressure (OR value of 1.030, 95 % CI of 1.003 to 1.058, $P < 0.05$), LDL (OR 4.951, 95 % CI 1.056-23.217, $P < 0.05$), FPG (OR 1.879, 95 % CI 1.391-2.538, $P < 0.001$), and blood uric acid (OR 1.006, 95 % CI 1.001-1.010, $P < 0.05$) were the most common factors affecting HbA1c attainment in elderly patients with type 2 diabetes. (Table 6)

Table 6. Logistic regression analysis of influencing factors related to HbA1c compliance in 240 patients

Variant	B	S.E	Wald χ^2	OR	95 % CI	P
Age	0.025	0.034	0.545	1.026	0.959~1.097	0.460
Gender	0.260	0.459	0.321	1.297	0.528~3.188	0.571
Course of disease	0.031	0.028	1.235	1.032	0.977~1.090	0.266
Weight	-0.027	0.019	1.884	0.974	0.938~1.011	0.170
Systolic blood pressure	0.030	0.013	4.826	1.030	1.003~1.058	0.028
Diastolic blood pressure	-0.009	0.022	0.165	0.991	0.948~1.035	0.685
TCHO	-1.049	0.776	1.828	0.350	0.077~1.603	0.176
TG	0.567	0.426	1.768	1.762	0.765~4.062	0.184
LDL	1.600	0.788	4.117	4.951	1.056~23.217	0.042
HDL	1.036	1.230	0.709	2.817	0.253~31.389	0.400
AST	0.008	0.051	0.023	1.008	0.911~1.114	0.880
ALT	0.059	0.036	2.640	1.061	0.988~1.139	0.104
Urinary creatinine	0.000	0.000	1.875	1.000	1.000	0.171
Urine micro-protein	0.018	0.010	3.644	1.019	1.000~1.038	0.056
FPG	0.631	0.153	16.912	1.879	1.391~2.538	0.000
Blood uric acid	0.006	0.002	5.575	1.006	1.001~1.010	0.018

4. Discussion

In recent years, diabetes mellitus in China has been a

rapidly rising trend, and most of the patients are adults with the onset of diabetes mellitus. In this study, a total of 240 elderly type 2 diabetes mellitus patients were collected from

hospitalized patients in a hospital of Liuzhou, 102 men and 138 women, whose age was (70.05 ± 6.31) years old, which is in line with the results of the study conducted in line with the findings of F. Kan, Le Roith D [4, 5] that most of the elderly patients with type 2 diabetes mellitus had onset of the disease at around 70 years of age. In the patients' medical records, it was found that most of the patients had a long disease duration of 10.00 (5.00, 16.00) years, with no obvious symptoms or mild symptoms the early stage, and no other comorbidities and complications, which were easy to be ignored by the patients, resulting in the slow development of the disease, and in the old age, diabetic patients had typical symptoms or abnormally high blood glucose, and diabetes mellitus was diagnosed in the clinic. Therefore, the clinical need for patients to cooperate with the treatment of health care personnel, dietary control and long-term adherence to the use of hypoglycemic drug therapy, which may also be one of the reasons affecting the patient in the process of treatment found that the blood glucose control is not stable. Statistical analysis showed that there were gender differences in body weight, HDL, ALT, urinary creatinine and blood uric acid among elderly patients with type 2 diabetes mellitus, and female patients with type 2 diabetes mellitus in this hospital had higher levels of body weight, HDL, ALT, urinary creatinine and blood uric acid than male patients, which may be due to the unique physical characteristics of female patients, suggesting that female patients may be more likely to experience a faster rate of change than male patients and that healthcare professionals should be more responsive to the needs of patients and their families. This suggests that female patients may change faster than male patients in their condition, and healthcare professionals should be more cautious in observing the changes in clinical indicators and controlling the changes in patients' conditions.

A study of diagnostic criteria for diabetes mellitus of Hou J N [6] showed that 2-h post-load or random blood glucose ≥ 11.1 mmol/L and FPG ≥ 7 mmol/L and HbA1c $\geq 6.5\%$ measured in venous blood may be an important factor contributing to comorbidities of deglycation, and the Chinese Diabetes Section of Chinese Medical Association (CDS) [7]. In 2021, the Chinese Medical Association Diabetes Section (CDS) recommended the adoption of HbA1c as a criterion for the diagnosis of diabetes mellitus. Accordingly, glycemic control was considered to be achieved with HbA1c $< 6.5\%$ and FPG 7 mmol/L. Among the 240 patients in the hospital, the compliance rate of HbA1c accounted for only 29.17%, the failure rate accounted for 70.83%, and the compliance rate of FPG accounted for 66.25% and the failure rate accounted for 33.75%, which suggests that the glycemic control was achieved in only 29.17% and the failure rate accounted for 33.75%, indicating that the compliance rate of glycemic control is low in general. As one of the important monitoring indexes of glycemic control, the number of people meeting the standard accounted for less than half, which is comparable to the compliance rate of diabetic glycemic control in other provinces and municipalities [8-10]. The glycemic control rate of diabetes mellitus is similar to that of other provinces and municipalities, and it is mostly a low rate. Most of the hospitalized elderly patients with type 2 diabetes mellitus have low glycemic compliance and are comorbid with one or more diseases, the most common comorbidities are hypertension, coronary heart disease and other diseases, and poor glycemic control of diabetes mellitus itself will also trigger corresponding complications, such as peripheral

vasculopathy, peripheral neuropathy, and other chronic damages, so it is necessary to control and deal with the prevention and treatment of type 2 diabetes mellitus in the elderly blood pressure and blood lipids control and treatment. In this study, we also found that the control rate of blood pressure and blood lipids of elderly type 2 diabetic patients was low, but both were above 50%, and the control of blood pressure and blood lipids was slightly better than that of blood glucose in general, which indicates that most elderly type 2 diabetic patients may be admitted to hospitals because of physical discomfort caused by poor control of blood glucose, blood pressure, and blood lipids. The most basic requirement for the treatment of diabetic patients is to control blood glucose and to delay other comorbidities and complications from controlling blood glucose. This requires medical staff and patients themselves to strengthen their understanding of the importance of glycemic control. Medical staff also need to take more convenient, effective and targeted programs for the treatment of diabetic patients. Medical staff in the treatment process also need to continue to strengthen diabetes-related knowledge of publicity and education, to deepen the diabetic patients for the knowledge of the disease, strengthen the diabetic patients' daily dietary control, continuous and long-term self-monitoring of blood glucose, and strengthen the diabetic patients to control their diet. At the same time, diabetic patients should strengthen daily diet control, continuous and long-term self-monitoring of blood glucose, and good control of blood glucose. Intensive treatment of diabetic inpatients should be vigorously promoted to control glucose metabolism at its root cause, to make it possible to keep the blood glucose levels of patients with type 2 diabetes and the harm caused by its complications within the optimal range.

In this study, it was also found that the levels of TCHO and TG in the HbA1c-attainment group were lower than those in the non-attainment group among 240 elderly patients with type 2 diabetes mellitus in this hospital, and the difference between the two groups was statistically significant ($P < 0.05$), indicating that it may be beneficial to reduce TCHO and TG in the case of HbA1c-attainment, which is in line with the results of the study of Lin Min et al. [11] with some indexes. Secondly, there were also intergroup differences in systolic blood pressure, LDL, urinary micro-protein, and FPG between the HbA1c-attainment group and the non-attainment group, and the levels of all three indexes were lower in the attainment group than in the non-attainment group, which may indicate that attainment of the HbA1c standard can lead to a decrease in systolic blood pressure as well as a decrease in the values of LDL, urinary micro-protein, and FPG in venous blood, which indicate that, under the circumstances of good control of blood sugar, the systolic blood pressure, LDL, urine micro-protein, and FPG, the situation can also be well controlled, excluding the influence of other diseases, and may not appear clinically abnormal indicators. In addition, for patients with type 2 diabetes mellitus, urinary micro-protein is a clinical indicator for the early diagnosis of diabetic nephropathy, and a comprehensive indicator of cardiovascular and cerebrovascular diseases (such as myocardial infarction, stroke) and insulin resistance syndrome, so a decrease in urinary micro-protein values when HbA1c reaches the standard which may indicate a certain extent that good glycemic control can prevent the occurrence and development of diabetic nephropathy and reduce the number of complications in patients with diabetes mellitus,

complications in diabetic patients. The statistical analysis of the data of various clinical indexes of elderly type 2 diabetic patients by whether the FPG reaches the standard or not, concluded that there was no difference in gender, age, duration of disease, body weight, systolic blood pressure, diastolic blood pressure, TCHO, TG, LDL, HDL, AST, ALT, urinary creatinine, urinary micro-protein, HbA1c, and blood uric acid between the two groups of the elderly type 2 diabetic patients at the hospital ($P > 0.05$). Secondly, HbA1c was found to be correlated with TCHO, LDL, urinary micro-protein and FPG, and all of them were positively correlated, indicating that TCHO, LDL, urinary micro-protein, and FPG increased with the increase in the value of HbA1c when it was changing. Therefore, it is necessary to observe the changes in the values of multiple indicators in clinical treatment and, at the same time, to comprehensively and systematically observe the patient's situation, which is of great help to the patient's treatment and recovery.

This study also investigated the factors influencing glycemic control in clinical treatment, and the results showed that disease duration was not a factor influencing glycemic control in type 2 diabetes mellitus in the elderly. However, some studies, such as Riddle M and JU Haibing [12, 13] showed that the duration of diabetes mellitus was a factor influencing glycemic control, which is inconsistent with the results of the present study, probably because of the differences in the selection of the population to be studied and the differences in the age of the population, leading to differences in the results between the studies. However, due to the long duration of diabetes, LI Shun-Bin believes it is necessary to continue to focus on the risk of cardiovascular disease associated with T2DM [14]. The duration of diabetes mellitus is a major risk factor for cardiovascular disease. Moreover, there are many factors affecting glycemic control, and the study population enrolled in this hospital showed that systolic blood pressure, LDL, FPG, and blood uric acid were the main factors affecting the achievement of HbA1c in elderly patients with type 2 diabetes, and all of them were risk factors. There is a significant correlation between FPG and HbA1c standardization ($P < 0.001$), which shows that controlling systolic blood pressure, LDL, FPG, and blood uric acid can be conducive to the achievement of HbA1c standardization, which can alleviate and improve the condition of T2DM in the elderly. In the process of diabetes management, the control of blood glucose should be accompanied by the intervention of other related risk factors, such as high blood pressure, high blood lipids, overweight, obesity, etc., to achieve the reduction of microvascular lesions in diabetic patients and the possibility of cardiovascular events.

In summary, the trend of diabetes mellitus is gradually increasing, and most of the elderly patients with type 2 diabetes mellitus in this hospital were found to have poor glycemic control and abnormalities in other clinical test indexes during hospitalization through the examination of clinical indexes, among which the compliance rate of glycemic control was low and affected by clinical indexes of systolic blood pressure, LDL, FPG, and blood uric acid. Moreover, the patient's age is higher, their cognitive and control ability for the disease is weaker, and they are more likely to have complications related to abnormal blood glucose, with cardiovascular and cerebrovascular lesions being the most common and frequent, and the mortality rate is the highest in the clinic. Therefore, most elderly patients

require frequent hospitalization and have associated morbidity and mortality rates [15]. Therefore, elderly patients with type 2 diabetes mellitus, should realize the seriousness of the disease and the importance of cooperating with healthcare professionals in treatment. They also need to strengthen the integrated control and management of blood glucose, blood pressure, and blood lipids, so that they can control the development and deterioration of the disease in elderly patients from the overall level, and improve the quality of life of elderly patients.

5. Conclusion

The HbA1c compliance rate of 240 elderly type-2 diabetes inpatients included in this study reached only 29.17%, with a low level of control compliance, and other clinical indicators were also abnormal accordingly. Professional Healthcare should be treated and manage for the elderly patients, strengthen the principle of comprehensive management, enhance the self-management awareness of diabetes patients, strengthen self-monitoring of blood glucose and regular exercise in daily life, and control diet and regular exercise. Therefore, effective management of blood glucose in diabetic patients prevents complications and improves the quality of life of patients.

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