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DIETARY COMPLIANCE AND GLYCEMIC MONITORING STATUS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS AT TRA VINH GENERAL HOSPITAL IN 2025

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ABSTRACT

Introduction: Diabetes mellitus is a common non-infectious disease characterized by disorders of glucose metabolism and insulin resistance. The prevalence of diabetes mellitus has been rapidly increase in recent years.

Objectives: To determine the rate of dietary compliance and glycemic monitoring status among patients with type 2 diabetes in the outpatient setting at Tra Vinh General Hospital.

Methods: A descriptive cross-sectional study was conducted on 308 outpatients at Tra Vinh General Hospital from April 2025 to June 2025. Patients who met the inclusion criteria were selected and interviewed to collect complete information using a questionnaire form.

Results: The prevalence of comorbidities was 87.3%, with hypertension being the most common comorbid condition (90.3%). Most patients were treated primarily with oral medications (79.2%). Overall treatment dietary compliance (79.5%) and compliance with blood glucose monitoring and periodic health check-ups (12.3%).

Conclusion: Type 2 diabetes is emerging as an urgent public health challenge. The findings of this study may support the development and implementation of appropriate management strategies.

Keywords: Type 2 diabetes mellitus, dietary compliance, glycemic monitoring.

1. INTRODUCTION

According to the World Health Organization (WHO), there were approximately 14% of adults aged 18 years and older were living with diabetes mellitus in 2022, with a rapidly increase from 7% in 1990. More than 59% diabetes pateint were not receiving pharmacological treatment in 2022, and the diabetes treatment coverage remains lowest in low- and middle-income countries. Treatment compliance plays a crucial role in glycemic control, preventing the onset of complications and reducing mortality. The poor compliance was associated with high HbA1c and hypoglycemia levels, and reduced quality of life. However, numerous studies have reported persistently high rates of non-compliance among type 2 diabetes mellitus patients, which substantially compromise treatment outcomes and quality of patient life [1],[2].

Statistical reports from Tra Vinh General Hospital from 2019 to 2025 indicate a marked increase in the patients with diabetes seeking examination and treatment. Notable increases were observed in 2021 (10,307 cases), 2022 (11,972 cases), 2023 (12,046 cases), 2024 (11,356 cases, and reaching 12,050 patients in 2025, which highlights diabetes mellitus as an increasingly urgent public health challenge in Tra Vinh province. Due to the signalling of an upward trend, the management of treatment compliance in type 2 diabetes mellitus patients was significantly important, which can help reduce their morbidity and enhance the quality of patient life. In light of these concerns, this study was conducted to determine the rate of dietary compliance and glycemic monitoring status among patients with type 2 diabetes in the outpatient setting at Tra Vinh General Hospital.

2. MATERIALS AND METHODS

2.1. Inclusion criteria: Patients were diagnosed with type 2 diabetes mellitus for more than three months according to the 2018 criteria of the American Diabetes Association (ADA) at the Outpatient Department of Tra Vinh General Hospital and agreed to participate in this study

2.2. Exclusion criteria: Patients with endocrine disorders affecting body weight; pregnant women, individuals with physical deformities preventing accurate measurement of height or weight, individuals with cognitive impairment, psychiatric disorders, unstable mental status or who could not communicate were excluded. In addition, patients with severe acute illnesses who were unable to participate in or complete the interview questionnaire were excluded.

2.3. Study design: A descriptive cross-sectional study was conducted among 308 patients with type 2 diabetes mellitus receiving outpatient treatment at Tra Vinh General Hospital from April 2025 to June 2025. A convenience sampling method was employed. Patients who met the inclusion criteria were selected and interviewed to collect complete information. Sampling was carried out from the initiation of the study until the required sample size was achieved. The procedure consisted of the following steps: (1) Approach potential participants and identify patients who met the inclusion criteria, (2) Invite eligible patients to participate in the study, clearly explain the study objectives and data collection procedures, and ensure their rights and benefits, (3) Conduct interviews to collect data, (4) Review the questionnaire and survey forms for completeness before concluding the interview, and (5) Express gratitude to the participants for their involvement in the

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interview.

2.4. Study variables: General characteristics: age, sex, living alone, and family history of type 2 diabetes mellitus. Related factors, including duration since diagnosis, comorbidities and number of comorbid conditions, current glycemic control methods, and nutritional status

2.5. Data processing and statistical analysis: After data collection, information was verified. Data were cleaned and coded according to study records. The data analysis process was performed using Stata version 17.0.

3. RESULTS

3.1. Characteristics of the Study Population

Analysis of the general characteristics of the 308 participants showed that the majority were female (65.9%). The mean age was 61.5 years, with the ≥ 60-year age group accounting for the highest proportion (62.7%), while the below 49-year group had the lowest proportion (12.6%) (Table 1).

The mean duration of diabetes was 8.6 ± 6.2 years. The largest proportion of patients had a disease duration of 1–10 years (62.6%). The prevalence of comorbidities was 87.3%, with hypertension being the most common comorbid condition (90.3%). Most patients were treated primarily with oral medications (79.2%).

3.2. Characteristics of dietary compliance

As shown in Figure 1, most patients demonstrated good compliance to dietary recommendations. The proportion adhering to disease-specific dietary guidelines over the past month reached 97.7%, compliance to general dietary recommendations was 94.2%, and limiting sweet intake was reported by 93.2% of patients. However, 98.4% of patients did not reduce food intake for weight loss, and avoidance of high-fat foods remained limited (25.3%). Furthermore, there were 79.5% of patients meeting the criteria dietary compliance the SDSCA scale; approximately 20.5% of patients did not adhere to dietary recommendations.

Table 1. General characteristics of the study participants

Characteristic		n	%
Gender	Male	105	34.1
	Female	203	65.9
Age	<49 years	39	12.6
	50–59 years	76	24.7
	≥60 years	193	62.7
Duration of disease	<1 year	18	5.8
	1–10 years	193	62.6
	>10 years	97	31.5
Comorbid conditions	Hypertension	243	90.3
	Cardiovascular disease	130	48.3
	Renal disease	22	8.2
	Joint disorders	75	27.9
	Others	41	15.2
Current glycemic control method	Oral medication only	244	79.2
	Insulin only	6	2.0
	Oral medication plus insulin	58	18.8

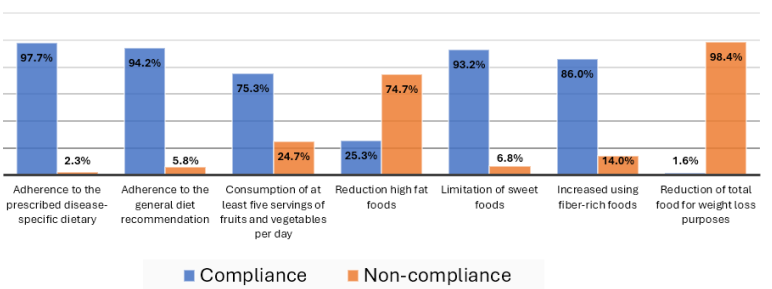

Figure 1. Dietary compliance characteristics

3.3. Blood glucose monitoring and re-examination

The results indicate that only 14.6% of patients performed home blood glucose monitoring at home. All patients attended monthly follow-up visits general health check-ups (100%).

Table 2. Blood glucose monitoring and re-examination

Characteristic		n	%
Blood glucose monitoring at home	No	263	85.4
	≥ 2 times/week	38	12.3
	< 2 times/week	7	2.3
Re-examination	Every month	308	100
	Every 2 months	0	0
	Every 3 months	0	0
	> 3 months	0	0

4. DISCUSSION

4.1. Characteristics of the study population

This study was conducted on 308 patients with type 2 diabetes mellitus receiving outpatient treatment at Tra Vinh General Hospital. The results showed an unequal sex distribution, with females predominating (65.9%) over males (34.1%), resulting in approximately a twofold higher proportion of women than men. This finding was consistent with previous studies, including Dinh Thi Mai (2023), Pham Thi Kim Yen (2019), and Cao Thuc Hien (2023), who showed that more than 60% patients were female [2],[3]. The observed disparity reflects greater healthcare utilisation among women than among men. From a physiological perspective, postmenopausal women often experience a decline in estrogen, resulting in the loss of metabolic protective mechanisms and an increased susceptibility to metabolic disorders and established risk factors for type 2 diabetes mellitus [4]. Consequently, women may be more likely to seek medical examination and treatment earlier, contributing to the observed sex difference.

The mean age of the study participants was 61.5 ± 9.8 years. The majority belonged to the upper 60-year age group, accounting for 62.7% of participants. This finding is consistent with the studies by Pham Thi Lam Phuong (2024) and Le Ngoc Diem (2023), which reported that 59.6% and 62.9% of patients were older than 60 years, respectively [5], [6]. The Centers for Disease Control and Prevention indicated that diabetes prevalence increased progressively with age, with 16.5 million individuals aged over 65 years (29.2%) among all patients with diabetes for the period 2017–2020 in the United States. Collectively, these studies demonstrate a clear trend of increasing prevalence with age, particularly in individuals aged ≥ 60 years. This pattern is consistent with the physiological and epidemiological characteristics of type 2 diabetes mellitus, as disease risk typically emerges after the age of 45 and increases over time.

4.2. Characteristics of diabetes

The duration of diabetes was relatively evenly distributed across the 1 to 10 years group, accounting for 62,6%. The group with disease duration <1 year had the lowest proportion (5.8%). This finding differs from those of Pham Thi Kim Yen (2021), who reported that 65.1% of patients had a diabetes duration of 1–5 years. This discrepancy may be attributable to differences in age between the two study populations. In the present study, 62.7% of patients were older than 60 years, which may explain the longer disease duration observed. Clinically, disease duration may influence treatment adherence. In the early stages, patients may be more proactive and motivated to learn about and engage in treatment. Over time, although patients may accumulate experience in managing the disease, prolonged duration and the emergence of complications may lead to complacency, treatment fatigue, and reduced adherence.

Regarding comorbidities, 87.3% of patients had at least one comorbid condition. Among comorbid conditions, hypertension was the most common (90.3%), followed by cardiovascular disease (48.3%). These findings reflect the characteristic clinical profile of patients with type 2 diabetes mellitus, who tend to have a high burden of comorbidities due to the chronic progressive nature of the disease and the close association between glucose metabolism disorders and cardiovascular, hypertensive, and lipid abnormalities. The same results were also found in previous research, including Nguyen Hong Chuong (2023), Pham Thi Lam Phuong (2024), Le Anh Ngoc (2024), who also reported that more than 75% of patients had comorbidities, and hypertension was the most prevalent comorbid condition [6], [7], [8]. However, the comorbidity rate in the present study was notably higher than that reported by Pham Thi Kim Yen (2021), who found that 51.3% of patients had one comorbidity, with hypertension accounting for 45.1%. Several factors may explain the higher comorbidity prevalence in the present study. First, Tra Vinh General Hospital is the highest facility in Tra Vinh province, so it often receives older patients with long disease duration, complex clinical profiles, and referrals from lower-level facilities, resulting in a higher comorbidity burden. Second, this study observed a predominance of older patients and longer disease duration, both of which are major risk factors for comorbidities, which likely contributed to the high prevalence. Moreover, these findings align with the increasing trend in comorbid non-communicable diseases in the community.

The majority of patients (79.2%) used oral hypoglycemic agents alone for glycemic control, and only 2% used insulin alone. These findings are consistent with those reported by Cao Thuc Hien, who found that 70% of patients used oral therapy [3]. The predominance of oral therapy indicates that most patients had not yet progressed to a stage requiring insulin therapy and remained responsive to pharmacological treatment. This result suggests a positive signal regarding treatment compliance. It aligns with national diabetes management guidelines, which recommend oral agents as first-line therapy, with insulin introduced when adequate glycemic control cannot be achieved with oral medication alone.

4.3. Dietary compliance

Dietary compliance in this study was assessed using the Summary of Diabetes Self-Care Activities (SDSCA) scale, which includes seven factors assessing compliance with dietary recommendations over 1 week. Patients were considered adherent if recommendations were followed on average for at least five days per week (mean score ≥ 5). The results showed that 79.5% of patients achieved dietary compliance as defined by the SDSCA. Compliance with prescribed therapeutic diets was notably high, with 97.7% adhering to dietary recommendations over the previous month, and 94.2% following general portion guidelines. High compliance was also observed for high-fiber intake (86.0%) and consuming five or more small meals (75.3%). However, compliance with the factor “reducing food intake to lose weight” was extremely low (1.6%), indicating that weight reduction remains a challenging behavioural change for patients. Importantly, compliance with limiting sweets, a key factor in glycemic control, was high (93.2%), reflecting good patient awareness of the role of diet in diabetes management. These findings are consistent with previous studies by Lam Tan Hien (2019) and Dinh Thi Mai (2023) [2], which reported that 91.4% and 93.3% of patients, respectively, limited their intake of sweets. Given that diabetes mellitus is a common chronic disease, most patients are aware of the need to restrict sugar intake to achieve better glycemic control. However, differences were observed when compared with Pham Thi Kim Yen (2021), who reported a dietary compliance rate of 61.5%. This discrepancy might be attributed to differences in measurement tools, study settings, and sample sizes.

Notably, this study appears more favourable than Yoo S.-M. et al. (2023) also used the same SDSCA scale in Korea and reported that only 19.6% of patients adhered to healthy dietary practices for at least 5 days per week, and 27.8% adhered to recommended fruit and vegetable intake. The mean dietary compliance frequency in the Korean study was 3.2 ± 1.3 days

per week. The higher compliance observed in the present study may be attributed to the setting of a provincial general hospital, where patients receive direct care and education from frontline health-care professionals, including dedicated health communication and education units. In contrast, the Korean study highlighted the influence of industrialised dietary patterns, busy work schedules, and other lifestyle factors that may hinder dietary compliance [9]. Differences in primary health care support systems, personalised intervention approaches, and cultural dietary practices may also contribute to the observed variation.

4.4. Adherence to glycemic control and regular follow-up visits

In our study, only 14.6% of patients performed self-monitoring of blood glucose at home, consistent with the results reported by Pham Thi Huyen Trang (2023) [10]. However, our adherence rate remains markedly lower than that reported by Pham Thi Kim Yen (2021), who found that 74.9% of patients adhered to glycemic control practices. These substantial discrepancies may be attributable to differences in adherence assessment criteria between studies.

In addition, in our study, the majority of participants demonstrated high medication adherence (93.8%) and relatively good adherence to a disease-specific diet (79.5%). Many patients may have perceived their blood glucose levels as adequately controlled, leading to reduced motivation to regularly self-monitor. Furthermore, some patients believed that blood glucose testing during follow-up visits was sufficient, neglecting home monitoring and contributing to a high rate of non-adherence to glucose tests. Nevertheless, a positive finding worth noting is that the rate of adherence to home blood glucose monitoring in our study (12.3%) was substantially higher than that reported by Thach Thi Ut Huyen (2020) at Tra Vinh General Hospital, where only 3.4% of patients monitored blood glucose [11]. This result suggests a degree of improvement in patients' awareness and behaviours related to diabetes control.

Moreover, a notable strength of our study is that 100% of participants attended monthly follow-up visits, indicating strong adherence to scheduled clinical appointments. This may be explained by the healthcare facility treatment protocol, which dispenses medications on a 30-day basis, and by continuous reminders from healthcare providers to return for follow-up visits as scheduled.

5. CONCLUSION

Type 2 diabetes is emerging as an urgent public health challenge. The finding demonstrated almost patient follow up the diatery recommendation for diabetes patient, however there is low of patient regular glycema blood monitoring during treatment. The findings of this study may support the development and implementation of appropriate management strategies.

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