



Nutritional status among patients with type 2 diabetes at Nam Dinh General Hospital in 2022

Pham Van Son¹, Duong Thanh Tinh², Lai Thi Ha³.

¹Nam Dinh University of Nursing, ²Nam Dinh General Hospital, ³Dong A University

ABSTRACT

Objectives: To assess nutritional status among patients with type 2 diabetes at Nam Dinh General Hospital in 2022. **Methods:** Cross-sectional descriptive study was conducted on 98 patients with diabetes Type 2 at the Outpatient Department of Nam Dinh General Hospital. **Results:** Nutritional status among diabetic patients according to 24-hour diet was 61.2% of patients met < 80% of recommended energy needs, 18.4% of patients met < 80 - 100 % of recommended energy needs and 20.4% met more than 100% of recommended energy needs. According to SGA 18.4% of patients with diabetes were at risk of malnutrition, 81.6% had good nutrition. **Conclusion:** The nutritional status among type 2 diabetes patients at Nam Dinh General Hospital is quite good. To limit the risk of malnutrition, patients with diabetes need to continue to follow their pathological diet.

Keywords: Nutritional status, patients with type 2 diabetes

INTRODUCTION

The global proportion of diabetes has been an alarming trend which increased from 10.5% (536.6 million) among patients aged 20–79 in 2021 to 12.2% (783.2 million) by 2045 ¹. Additionally, it is estimated that approximately 44.7% (239.7 million) of adults with diabetes do not realize it ². Type 2 diabetes is the most common type of disease which accounts for nearly 90% of the 536.6 million diabetes cases ³, therefore preventing and treating this disease has become urgent. Diabetics are susceptible to a series of health problems, which not only affect the quality of life but also threaten the patient's life. Chronic hyperglycemia can

cause severe damage to the body and failure of various organs which lead to disabling and life-threatening health complications and is a major cause of cardiovascular disease, kidney failure, lower limb amputation and blindness. However, proper management may help delay or prevent these.

For patients with type 2 diabetes, proper nutrition plays a very important role. Having a reasonable diet combined with physical activity is enough to control blood sugar in the early stages without using hypoglycemic drugs. About 10% of patients with type 2 diabetes have long-term or temporary blood sugar stability that can be maintained with a low-glucid diet without medication ⁴.

Although modern medications effectively control diabetes, it is difficult to reverse the progression of the disease. Better, cheaper and simpler treatments with fewer side effects to prevent type 2 diabetes, especially non-pharmacological interventions, are being researched.

According to statistics at Nam Dinh Provincial General Hospital, there were about 80 - 150 patients with type 2 diabetes were treated each month. However, the studies only mentioned the incidence of type 2 diabetes without any official research on the nutritional status among patients. Therefore, the research was conducted with the objective to assess the nutritional status among patients with type 2 diabetes at Nam Dinh General Hospital in 2022.

RESEARCH PARTICIPANTS AND METHODS

Research participants: Type 2 diabetes patient were treated at Nam Dinh General Hospital

Inclusion criteria: Patients were 18 years old or older, able to answer interview questions.

Exclusion criteria: Patients who cannot determine BMI, scoliosis, patients with accompanying diseases such as cardiovascular disease or pregnancy.

Research time and location: The study was conducted from December 2021 to August 2022 at Outpatient Department, Nam Dinh General Hospital.

Research design: Descriptive cross-sectional study was used to conduct the research

Sampling method: Select all type 2 diabetes patients being treated at Nam Dinh General Hospital. At the time of the

investigation, we selected 98 people with type 2 diabetes who met the criteria for the study.

Measurement: Part 1: General information about research participants. Part 2: Nutritional status among patients with type 2 diabetes:

BMI < 18.5: Underweight; 18.5 – 24.9: Normal; ≥ 25 : Overweight, obese

Comprehensive nutritional measurement for patients (Subjective Global Assessment - SGA). Nutritional status was assessed according to SGA. Divided into 3 levels: Good nutrition, Risk of malnutrition, Malnutrition.

24-hour diet reflected the amount of food the patient ate in the past 24 years, based on the Vietnamese food composition table ⁵, calculates the amount of energy the patient took into the body compared to the recommended energy, and also calculated the amount of nutrients: glucid, protein, and lipid that patients ate compared to the recommended needs for patients with diabetes ⁶.

Recommended energy needs = 30kcal * patient's weight. Patient's 24-hour diet was divided into 3 levels: Meet < 80% of recommended energy needs. Meet 80 - 100% of recommended energy needs. Meet > 100% of recommended energy needs.

Data analysis: Quantitative variables were calculated as mean and standard deviation; largest and smallest value.

Qualitative variables were calculated for frequencies and proportions (%): results were presented in table or graph form.

Ethical issues: The study was approved by the Ethics Committee of Nam Dinh University of Nursing with certificate No. 470/GCN-HDĐD dated March 3rd, 2022.

RESULT**Table 1. Disease duration of participants (n = 98)**

Duration of illness	Frequency	Percentage (%)
Under 5 years	26	26.5
5-10 years	40	40.8
Over 10 years	32	32.7

There was 40.8% of patients with a disease duration of 5 - 10 years among 98 patients.

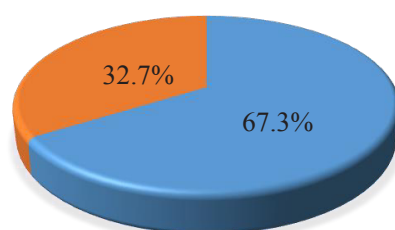
**Figure 1. Family support (n = 98)**

Figure 1 showed that 67.3% of patients received support from their families regarding nutrition when they had diabetes.

Table 2. Behavioral and lifestyle characteristics of participants (n = 98)

Characteristic		Frequency	Percentage (%)
Diet	Comply a pathological diet	46	46.9
	Do not comply a pathological diet	52	53.1
Smoking	Currently smoking/ Used to smoke	21	21.4
	No smoking	77	78.6
Using alcohol/beer	Currently drinking/ Used to drink	38	38.8
	No drinking	60	61.2
Physical activity	Yes	83	84.7
	No	15	15.3

Table 2 indicated that the proportion of patients complying with the diet is 46.9%; 21.4% of patients are/have ever smoked; 38.8% are/have ever drank alcohol; 84.7% were physically active.

Table 3. Nutritional status according to BMI (n = 98)

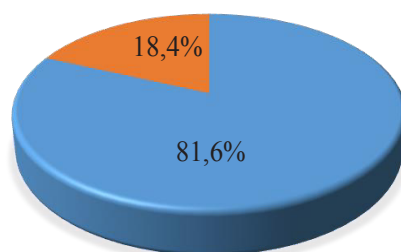
Nutritional status according to BMI index	Frequency	Percentage (%)
Normal	78	79.6
Underweight	50	5.1
Overweight, obese	15	15.3

79.6% of patients had a normal body mass index, 5.1% of patients were underweight and 15.3% of patients were overweight or obese.

Table 4. Characteristics of 24-hour diet (n = 98)

24-hour dietary energy	Mean \pm SD	Recommended needs	Response level (%)
Energy due to P (Kcal)	242.8 \pm 66.1	259.26 \pm 39.95	93.7
Energy due to L (Kcal)	298.02 \pm 114.61	259.26 \pm 39.95	115
Energy due to G (Kcal)	807.61 \pm 240.01	864.18 \pm 133.18	93.5
Total energy (Kcal)	1349.91 \pm 323.45	1728.37 \pm 266.36	78.1
Meets 24-hour dietary energy according to recommended needs	Frequency	Percentage (%)	
Meet < 80% compared to recommended needs	60	61.2	
Meet from 80 - 100% compared to recommended needs	18	18.4	
Meet > 100% compared to recommended needs	20	20.4	

The average energy provided by the diet was 1350.93 \pm 322.87 kcal. 61.2% of patients had diets lower than 80% of recommended energy needs.

**Figure 2. Nutritional status by SGA (n=98)**

No patients with diabetes had malnutrition, 18.4% of patients with diabetes were at risk of malnutrition and 81.6% of patients had good nutrition.

DISCUSSION

In the study, 67.3% of patients with diabetes received nutritional support from their families, which was a quite low rate. For patients with type 2 diabetes, daily nutrition greatly affects the patient's blood sugar index, therefore, encouragement, reminders and nutritional support from relatives will ensure patients' compliance with nutritional treatment and limit possible complications. There need to be measures to improve this problem which help patients with type 2 diabetes feel more shared and confident in the process of implementing the diabetic diet.

Regarding the behavioral and lifestyle characteristics of participants, the rate of patients with type 2 diabetes who complied with the pathological diet was 46.9%, and 53.1% did not comply. Diabetes prevention studies have demonstrated that dietary composition was another important factor in preventing the development of type 2 diabetes. Epidemiological studies indicated that the risk of diabetes may increase or decrease due to dietary factors. Dietary factors that may increase the risk of diabetes include excessive consumption of refined grains, sugar-sweetened beverages, red and processed meats, and alcohol. Factors that decrease the development of diabetes was whole grains, vegetables, milk, legumes, and nuts, regardless of changes in body weight ⁷. This result was lower than Bui Cong Nguyen's research results with 76.9% of patients complying with a regular nutritional diet, 23.1% of patients who did not comply or irregularly comply with a pathological diet ⁸.

Regarding smoking habits, there were still 21.4% of people with type 2 diabetes who used to smoke or were currently

smoking. This result was lower than the study by Trinh Thi Ngoc Huyen et al. with 31% of patients who used to smoke or were still smoking ⁵. There were many patients under 60 years old in the study by Trinh Thi Ngoc Huyen et al. which may be due to patients were still not aware of the harmful effects of tobacco on diabetes ⁵.

Nowadays, there are more and more opinions about using alcohol/beer in the daily diet among patients with diabetes ⁹. The results indicated that 38.8% of patients with type 2 diabetes were drinking or used to drink alcohol in the past. In this study, only the use or non-use of alcohol by the research participants was measured, but not the frequency and consumption of alcohol. Therefore, patients with type 2 diabetes who had consumed alcohol in the previous 2 weeks were considered to use alcohol/beer. Future research can be developed to assess the influence of frequency of using and quantity of alcohol/beer use in diabetic patients.

Physical activity also plays a huge role in the treatment among patients with type 2 diabetes, there was 84.7% of diabetic patients who had physical activity. The International Diabetes Federation has similar recommendations to prevent type 2 diabetes by exercising for at least 30 to 45 minutes, 3 to 5 days a week ³. Tuomilehto's research reported that behavior change interventions may prevent or delay the development of type 2 diabetes for patients at high risk, changes in diet or activity may reduce the proportion of diabetes by nearly 60% in 4 years ¹⁰. Our research showed quite good results which demonstrated that in addition to diet, patients paid more attention to exercise, as well as physical activities to control weight and maintain a healthy lifestyle for themselves.

The results of this study indicated that nutritional status assessed by BMI index as follows: 79.6% of patients had a normal body mass index, 15.3% of patients were obese or overweight and 3% of patients were underweight. According to research by Trinh Thi Ngoc Huyen et al. on 255 people with type 2 diabetes from 20 to 70 years old who were treated at the department of clinical nutrition and dietetics, National Endocrine Hospital. The results showed that normal nutritional status according to BMI was 62.0%; overweight and obesity is 33.3%; Chronic energy deficiency is 4.7%. This difference may be due to the time and location of the study ⁵.

Assessing the 24-hour diet is also a method to determine the patient's nutritional status, by assessing whether the amount of food the patient eats in a day meets the patient's energy needs. In this study, the total energy that patients with type 2 diabetes met compared to the recommended needs reached 78.1%, the amount of Protein, Lipid and Glucid met the levels of 93.7%, 115% and 93.5% respectively. There was 61.2% of patients met < 80% of the recommended needs that patients needed. This is a quite high rate and it is necessary to introduce intervention measures to ensure nutrition for patients at the present time and throughout the future period of diabetes treatment.

Assessing the nutritional status of diabetic patients according to SGA, 18.4% of patients were at risk of malnutrition. This result was similar to the study by Maria Vieira De Lima Saintrain and colleagues with 19.5% of patients at risk of malnutrition and malnutrition ¹¹. According to research by Nguyen Huu Dung on 257 female patients with type 2 diabetes at the Department of Endocrinology and Diabetes at Tien Giang General Hospital, the rate of

malnutrition according to SGA was 25%, of which moderate malnutrition was 21, 8% and average malnutrition was 3.9% ¹². In a study evaluating the nutritional status of elderly diabetic outpatients and related factors at National Geriatric Hospital, Nguyen Thi Hoai Thu and colleagues found that 31% of patients were malnourished and at risk of malnutrition ¹³.

CONCLUSION

Nutritional status according to 24-hour diet were that 61.2% of patients with type 2 diabetes met < 80% of recommended energy needs, 18.4% of patients met 80 - 100% of recommended energy needs and 20.4% met more than 100%.

Nutritional status according to SGA was 18.4% of patients with type 2 diabetes at risk of malnutrition.

REFERENCES

1. Sun H, Saeedi P, Karuranga S, Pinkepank M, Ogurtsova K, Duncan BB, et al. IDF diabetes atlas: global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. *Diabetes Res Clin Pract.* 2022;183:109119. doi: 10.1016/j.diabres.2021.109119
2. Ogurtsova K, Guariguata L, Barengo NC, Ruiz PL, Sacre JW, Karuranga S, et al. IDF diabetes atlas: global estimates of undiagnosed diabetes in adults for 2021. *Diabetes Res Clin Pract.* 2022;183:109118. doi: 10.1016/j.diabres.2021.109118.
3. International Diabetes Federation. *IDF Diabetes Atlas*, 10th edn. Brussels, Belgium. 2021. <https://www.diabetesatlas.org>
4. Ha Huy Khoi. *Clinical Nutrition*, Medical Publisher, Hanoi. 2002.

5. Nguyen Cong Khan. Table of Vietnamese food ingredients, Medical Publisher, Hanoi. 2007.
6. Ministry of Health. Guidelines for clinical nutritional treatment, Medical Publishing House, Hanoi. 2015.
7. Van Dam RM, Rimm EB, Willett WC. et al. Dietary patterns and risk for type 2 diabetes mellitus in US men. *Ann Intern Med.* 2002;136(3):201–209 doi: 10.7326/0003-4819-136-3-200202050-00008.
8. Bui Cong Nguyen. Knowledge, practice of treatment compliance and some related factors among outpatients with type 2 diabetes at Central Hospital E in 2019 [Medical thesis], National Hanoi University. 2020.
9. PA Engler, SE Ramsey and RJ Smith. Alcohol use of diabetes patients: the need for assessment and intervention. *Acta Diabetol.* 2013, 50(2), p. 93-9. doi: 10.1007/s00592-010-0200-x.
10. Tuomilehto J, Lindström J, Eriksson JG. et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med.* 2001;344(18):1343–1350. doi: 10.1056/NEJM200105033441801.
11. W. Sami et al. Effect of diet on type 2 diabetes mellitus: A review. *Int J Health Sci (Qassim).* 2017, 11(2), p. 65-71.
12. Nguyen Huu Dung, Nguyen Thi Cam Luyen, Huynh Le Thai Bao. Research on nutritional status in women with type 2 diabetes at Tien Giang General Hospital. *Vietnam Journal of Diabetes and Endocrinology* 2021, (46), p. 191-197. DOI: 10.47122/vjde.2021.46.21
13. T.T.H Nguyen et al. Assessment of nutritional status in older diabetic outpatients and related factors in Hanoi, Vietnam, *J Multidiscip Healthc.* 2019, 12, p. 601-606. doi: 10.2147/JMDH.S194155.