

KNOWLEDGE, PRACTICE ON NUTRITION AND COMPLIANCE FOR USE OF MEDICATION IN TYPE 2 DIABETES OUTPATIENTS AT THE HOSPITAL OF AGRICULTURE IN 2016

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SUMMARY

Objectives: To describe the reality of knowledge, practice on food consumption, and adherence to medication in patients with type 2 diabetes (T2D) among outpatients at Agriculture General Hospital in 2016. **Subjects and methods:** A cross-sectional descriptive study was conducted through an interview on 602 patients using pre-designed questionnaires. **Results:** The rate of understanding about food choices suitable for people with diabetes: 5 food groups should be consumed (69.3%), 7 food groups should be limited (66.9%) and 4 food groups should not eat/drink (83.1%). Regular daily foods: Rice (100%), green vegetables (99.5%), the meat of all kinds (81.4%), ripe fruits (72.1%). The rate of eating foods daily is reasonable for people with diabetes: 1 bowl of rice or 1 full bowl of rice (36.9% and 21.9%); boiled/steamed or braised meat (32.6% and 38.0%); eating green vegetables reached ≥ 5 standard units/1 day (25.0%); eating ripe fruit after 2 hours postprandial of the main meal (41.2%). Adherence to medication in the treatment of diabetes: 84.6%, non-compliance: 15.4%. **Conclusion:** Knowledge about choosing the right food for people with diabetes is limited. The proper rate of daily food intake of people with diabetes is low. The rate of adherence to medication in the treatment of diabetes is not high.

* **Keywords:** Knowledge; Practice; Nutrition; Drug use; Diabetes; Agricultural Hospital.

INTRODUCTION

Type 2 diabetes mellitus is a chronic non-communicable metabolic disorder, with a social nature related to nutrition and lifestyle, with a rapid development rate in many countries around the world [8]. According to the International Diabetes Federation (IDF), in 1994 there were 110 million people with diabetes worldwide, this number increased to 246 million in 2010 and 425 million in 2017, and it will

have increased to 629 million people by 2045 [11]. In Vietnam, the prevalence of diabetes and impaired glucose tolerance among the 30 - 69 years old nationwide increased faster than the forecast, approximately doubling within 10 years from 2002 to 2012. In 2012, the survey by the National Hospital of Endocrinology on 11,000 people aged 30 - 69 across the country showed that 5.42% had diabetes [1]. It is forecasted that each year there will be about 88,000 new cases of diabetes,

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bringing the number of diabetic patients to 3.42 million by 2030 [2]. Treatment of diabetes is an ongoing process that lasts throughout the life of the patient. During the course of treatment, if the patient adheres well to treatment processes such as proper nutrition, daily physical exercise, strict adherence to the medication treatment regimen, periodical examination, and good glucose control, blood sugar will maintain a stable optimal blood sugar level, slow down complications, improve quality of life, reduce the burden of disease, disability, and death for patients, families, and society. However, in daily medical examination and treatment at outpatient clinics, doctors often pay little attention to counseling, education knowledge, nutrition, and daily physical exercise for patients, but often focus on medication prescriptions and treatment outcomes after each follow-up visit instead. A survey of 330 patients with T2D outpatients at the National Hospital of Geriatrics in 2012 showed that the rate of having correct knowledge about foods with high sugar content only reached 17.6% and 21.5% [3]. The proportion of patients with T2D treated as outpatients at My Tho City General Hospital (Tien Giang) in 2016, having correct knowledge about diabetic diets was 77.9% [4]. It is only necessary for diabetic patients to have knowledge and practice about unreasonable daily diet and nutrition, which also becomes one of the main causes of reducing the effectiveness of treatment and increasing the diabetic complications and treatment costs. Objectives of the study: *To describe the current status of knowledge, practice on food selection, use and adherence to medication use of patients with T2DM, outpatient at Agriculture General Hospital in 2016.*

SUBJECTS AND METHODS

1. Subjects, location, time

Patients with T2D had been confirmed with T2D for 6 months or more prior to the survey date; currently undergoing outpatient treatment at Agricultural General Hospital, registered to join the hospital diabetes education club and agreed to participate in the study.

* *Research period:* From September 2016 to October 2016.

2. Method

* *Sample size and sample selection of outpatient T2D patients*

+ Apply the formula in descriptive research:

$$n = Z^2_{(1-\alpha/2)}$$

Of which:

+ n: Minimum sample size of research subjects.

+ α : Statistically significant level: choose $\alpha = 0.05$.

+ z: (Confidence coefficient) = 1.96 ($\alpha = 0.05$ 95% confidence level)

+ p: choose p = 0.781 (The percentage of patients with T2D who adhere to medication in outpatient treatment at Hospital 198 was 78.1%, according to the research results of Le Thi Huong Giang et al. in 2013) [5].

Substitute the values into the formula to get n = 526. Prophylaxis 10% of the study sample size, calculated n = 579. Actually investigated 602 patients.

Apply a convenient sampling method. In 2 months (September, October, 2016), 602 patients who met the criteria were selected to participate in the study.

** Methods:*

Cross-sectional descriptive study, directly interviewing outpatients using a pre-designed questionnaire.

** Research content and indicators:*

- General characteristics of research subjects: Gender, age, education level, occupation, marital status, family economy, family history of diabetes, duration of diabetes.

- Knowledge of nutrition: The subject's understanding of the selection of foods to eat, to limit and not to eat/drink; how to eat fruit everyday not to increase blood sugar

- Nutritional practice: The subject's food habits in the past 6 months include: The food group used daily and the food group used 3 - 4 times/week; portion of rice for each meal of the day; habit of eating green vegetables, ripe fruits, and meat everyday.

- Compliance with medication use in the treatment of diabetes: Medication use

regime (tablets, injections) and missed medication within the last 6 months.

** Data processing and analysis:*

Data processing using Epidata 3.1 and Stata 14.0 software and performing descriptive analysis of percentages (%).

RESULTS

1. General characteristics of the study subjects

Total survey subjects: 602 people; male (50%), female (50%); average age: 67.5 ± 8.9 years; group ≥ 65 years old accounted for the highest rate (63.3%); 53.7% of subjects had lower and upper secondary education; retirees accounted for the highest percentage (60.0%); 98.8% of subjects were married; the household economy was at an average level or higher (97.2%); no family member with diabetes was present in 97.5%; The majority of the subjects had one year or more of diabetes (90.5%).

2. Knowledge and practice of nutrition

** Knowledge of food selection:*

Table 1: Subjects' understanding of appropriate food choices for people with diabetes (n = 602).

Food/Drink	Frequency	Rate (%)
Foods to eat		
Vegetables/fruits	597	99.2
Legumes (soybeans, chickpeas, white beans, red beans)	523	86.9
Fruits with a low glycemic index (apple, pear, guava, orange, grapefruit, peach)	381	63.0
Fish, seafood	345	57.3
Skinless poultry meat	238	39.5
Others and do not know do not answer	0	0.0
Total	417	69.3

Food/Drink	Frequency	Rate (%)
Foods to limit		
Fried, stir-fried, roasted dishes	410	68.1
Rice	578	96.0
Clear noodle	344	57.1
Potatoes of all kinds	373	62.0
White bread	210	34.9
Fruits with a medium glycemic index (banana, papaya)	512	85.0
Dried fruit, canned fruit	397	65.9
Fat, butter	402	66.8
Others and do not know do not answer	0	0.0
Total	403	66.9
Foods you should not eat/drink:		
Cakes, candies, sweets, sugary drinks	586	97.3
Organs, brains of animals	487	80.9
Processed meats (bacon, ham, sausage, beef/buffalo, canned meat)	403	66.9
Fruits with a high glycemic index (pineapple, lychee, longan, mango, custard apple, durian, jackfruit)	526	87.4
Others and do not know do not answer	0	0.0
Total	501	83.1

The average rate of the 5 food groups that should be eaten was 69.3% (the highest was green vegetables/fruits: 99.2%; the lowest was skinless poultry: 39.5%). The average rate of the 7 food groups that should be limited was 66.9% (the highest was rice: 96.0%; the lowest was white bread: 34.9%). The average rate of the 4 food groups that should not be eaten/dried was 83.1% (the highest was cakes, candies, sweets, sugary drinks: 97.3%; the lowest was processed meats: variable: 66.9%).

Table 2: Proportion of subjects who knew how to eat fruit properly (n = 602).

How to eat	Frequency	Rate (%)
Eat the whole fruit or cut it into pieces	458	76.1
Do not eat/drink juice or smoothies	431	71.6
Eat only 2 - 3 times a day	163	27.1
Do not eat fruit immediately after a meal	252	41.9
Eat fruit away from main meals	185	30.7
Do not repeat the same fruit over and over again	132	21.9
Do not eat many fruits with a high glycemic index at the same time	386	64.1
Others and do not know do not answer	0	0.0
Total	287	47.8

The average rate of the 7 ways of eating fruits to avoid high blood sugar was 47.8%; the highest was eating the whole fruit or cutting into pieces (76.1%); the lowest was not eating repeatedly a certain fruit (21.9%).

2. Practice using food

Table 3: Distribution of food-eating habits of subjects in the last 6 months (n = 602).

Food group	Food name	Frequency	Rate (%)
Regular daily use			
Green vegetables	Vegetables, tubers of all kinds	599	99.5
High glucose food	Rice	602	100.0
High-protein foods	Meat of all kinds	490	81.4
Fruit	Ripe fruits of all kinds	434	72.1
High-fat foods	Vegetable oil	367	61.0
Milk	Milk of all kinds	281	46.7
Frequency of use 3 - 4 times/week:			
High-protein foods	Fish and seafood	512	85.0
	Egg	431	71.6
	Tofu	426	70.8
	Beans of all kinds	211	35.0
High-fat foods	Peanut, sesame	258	42.9
	Vegetable oil	207	34.4
Foods high in glucose	Instant noodles	275	45.7
	Clear noodle	198	32.9
	Sweet potato	174	28.9
	Bread, dumplings	162	26.9
Fruit	Ripe fruits of all kinds	131	21.8

The food used daily: The highest was rice (100%), green vegetables (99.5%), the meat of all kinds (81.4%), ripe fruit (72.1%), vegetable oil (61.0%), and milk (46.7%). Foods used 3 - 4 times/week: Protein-rich foods such as fish and seafood (85.0%), eggs (71.6%), tofu (70.8%), beans/beans types (35.0%); food groups rich in lipids such as peanuts, sesame (42.9%), vegetable oil (34.4%). Foods are rich in glucose such as instant noodles (45.7%), vermicelli (32.9%), sweet potatoes (28.9%), bread, dumplings (26.9%), ripe fruit (21.8%).

Table 4: The subject's daily portion of rice for each meal in the last 6 months (n = 602).

The portion of rice for each meal	Frequency	Rate (%)
About 1/2 bowl	154	25.6
A bowl	222	36.9
A bowl full	132	21.9
Two bowls	59	9.8
Two bowls full	35	5.8
Don't remember/don't answer	0	0.0

The rate of eating rice per meal, the highest was eating one bowl (36.9%), followed by eating 1/2 bowl (25.6%), eating a full bowl (21.9%), eating two bowls (9.8%), and eat two full bowls (5.8%).

Table 5: Distribution of subjects' daily habits of eating green vegetables/fruits in the last 6 months (n = 599).

Group of variables		Frequency	Rate (%)
Food processing form	Cook soup	566	94.5
	Boiled	512	85.5
	Raw food	329	54.9
	Stir-fry	228	38.1
	Salad, mix	143	23.9
	Pickles/coffee salt	183	30.6
Number of standard units per day	1 - 2 units	167	27.9
	3 - 4 units	282	47.1
	≥ 5 units	150	25.0

Of the 599 people who eat vegetables and fruit every day, the number of people eating boiled vegetables and soup was the highest (94.5% and 85.5%), raw food (54.9%), fried (38.1%), rinsed salt (30.6%), salad/mix (23.9%). The number of people who eat ≥ 5 units of green vegetables/day was 25.0%.

Table 6: Distribution of subjects' daily habits of eating ripe fruits in the last 6 months (n = 434).

Group of variables		Frequency	Rate (%)
Ripe fruits:			
Ripe fruits have a low glycemic index	Guava	182	41.9
	Apple	152	35.0
	Orange, grapefruit	142	32.7
	Pear	63	14.5
	Papaya	55	12.8
	Grapes	112	25.8
Total		118	27.1
Fruits with medium glycemic index and high glycemic index	Banana	73	16.8
	Mango	48	11.2
	Fabric, label	29	6.7
	Pineapple	26	6.0
Total		43	9.9
Habit of eating ripe fruit:			
How to eat	1 fruit/each time	150	34.6
	2 fruits/each time	198	45.6
	≥ 3 fruits/each time	86	19.8
	Eat the whole fruit	21	4.8
	Eat cut pieces	361	83.2
	Blend/squeeze smoothies	52	12.0
Time of eating related to the main meal	Before the main meal	22	5.1
	Right after the main meal	86	19.8
	Less than 2 hours postprandial main meal	95	21.9
	2 hours or more postprandial main meal	179	41.2
	Any time of the day	52	12.0

The average rate that subjects used 6 types of fruits with a low glycemic index was 27.1% (the highest was guava: 41.9%; the lowest was papaya 12.8%).

The average rate that subjects used 5 fruits with medium glycemic index and high glycemic index was 9.9% (the highest was banana (16.8%); the lowest was pineapple: 6.0%)

Eat 1 or 2 fruits/each time (34.6% and 45.6%), ≥ 3 kinds of fruit/each time (19.8%). Eat whole fruit and slice/piece (4.8% and 83.2%), blend/juice (12.0%). Eat ripe fruit ≥ 2 hours after main meal (41.2%), eat less than 2 hours after main meal (41.7%), and any time of day (12.0%).

Table 7: Distribution of subjects' daily meat-eating habits in the last 6 months (n = 490).

Group of variables		Frequency	Rate (%)
Type of meat	Pork	358	73.1
	Poultry	100	20.4
	Beef	32	6.5
Processing form	Boiled/Steamed	160	32.6
	Braised	186	38.0
	Fry	87	17.8
	Dried shrimp paste	32	6.5
	Cold meat (smoked, sausage, ham, spring rolls, ...)	25	5.1

Daily meat-eating habits are mainly pork (73.1%), poultry (20.4%), beef (6.5%), braised and boiled/steamed meat (38.0% and 32.8%), fried (17.8%), dried shrimp (6.5%), and processed cold cuts (5.1%).

3. Status of adherence to diabetes medication

Table 8: Study subjects' diabetes medication regimen (n = 602).

How to take medicine		Frequency	Rate (%)
Medicines for treatment	Only pills	275	45.7
	Only injectables	192	31.9
	Pills + injections	135	22.4
Pills (n = 410)	Once a day	117	28.5
	Twice a day	268	65.4
	Three times a day	25	6.1
insulin injections (n = 327)	Once a day	66	20.2
	Twice a day	225	68.7
	Three times a day	31	9.6
	Other	5	1.5
Strictly take or inject drugs on time as prescribed by the doctor (in the last 6 months)	Yes, often	509	84.6
	Sometimes late	5	0.8
	Sometimes forgot medicine	86	14.3
	Do not take medicine sometimes	2	0.3

The proportion of subjects treated with only pills accounted for 45.7%, only injections: 31.9%, and both drugs: 22.4%. People who used tablets or the drug twice and once a day constituted 65.4% and 28.5%, respectively. The incidence of people who use insulin injections, the drug once and twice a day was found in 68.7% and 20.2%, respectively. The majority of subjects used the drug exactly as prescribed by the doctor (84.6%).

Table 9: Status of forgetting to take medicine of study subjects within the last 6 months (n = 86).

Situation of forgetting medicine		Frequency	Rate (%)
Type of medicine	Pills	49	57.0
	Injections	37	43.0
Number of missed pills/month	Less than 3 times	19	38.8
	3 times or more	30	61.2
Reasons for forgetting pills	Busy	9	18.4
	Forgot to bring medicine when away	6	12.2
	No one reminded	4	8.2
	Forget	30	61.2
What to do when forgetting to take your pills	Drink to make up for the next drink	13	26.5
	Throw away the medicine	27	55.1
	Ask a doctor	9	18.4
Number of missed injections/1 month	Less than 3 times	9	24.3
	3 times or more	28	75.7
Reasons for forgetting injections	Busy	6	16.2
	Forgot to bring medicine when away	4	10.8
	No one reminded	2	5.4
	Forget	25	67.6
What to do when forgetting to take your injections	Make up for the next injection	6	16.2
	Throw away the medicine	23	62.1
	Ask a doctor	8	21.7

Among 86 subjects who forgot to take medicine: 57.0% forgot pill, 43.0% forgot injection. Missing pills and injections ≥ 3 times/month accounted for 61.2% and 75.7%). The main reason for forgetting pills and injections is not remembering (61.2% and 67.6%). The most common way to manage when forgetting pills and injections is to skip them and don't make up for them next time (55.1% and 62.1%), seek medical advice (18.4% and 21.7%).

DISCUSSIONS

1. Reality of knowledge and practice of nutrition for T2D

Diabetes treatment is not only a long and persistent process, but also a combination of many measures, including drug treatment, nutrition, proper physical activity, blood sugar control in a good, timely manner, in which compliance with a reasonable diet plays an important role. According to a report by the American Diabetes Association, more than 3.2 million people with diabetes are hospitalized for inpatient treatment due to non-compliance with the treatment regimen leading to cardiovascular complications (40% of hospital admissions), respiratory diseases, and infections (30%) [10].

+ *Knowledge of food choices:* The results of table 1 show that the percentage of subjects with correct knowledge about choosing foods to eat is quite high (99.2% and 86.9% choose to eat vegetables and legumes) to increase fiber and help reduce glucose absorption. Meanwhile, the correct knowledge about other foods that should be eaten is not as high as the knowledge of fruits with low glycemic index (apple, pear, guava, orange, grapefruit, peach) (63.0%); fish, seafood (57.3%); skinless poultry meat (39.5%), or correct knowledge of foods to avoid (should not be eaten/drunk) such as offal, animal brain; processed meats (bacon, ham, sausage, beef/buffalo, canned meat); fruits with a high glycemic index (pineapple, lychee, longan, mango, custard apple, durian, jackfruit) only reached 80.9%; 66.9% and 87.4%. The results of our study on the proportion of subjects with correct knowledge about the pros and

cons of eating the above foods are higher than the research results of Bui Nam Trung et al. at the Central Geriatric Hospital in 2012 showed that 21.5% of T2D outpatient had correct knowledge about foods to avoid [3]. The results of table 2 show that in 7 ways to eat fruit to not raise blood sugar, the average rate of subjects knew only 47.8%. It shows the great demand for strengthening communication - health education about nutrition knowledge for diabetics and people in the community to know how to choose and use food appropriately to not raise blood glucose postprandial.

+ *Regarding the practice of using food:* Commonly used foods daily for the past 6 months showed: 100% of subjects used rice, green vegetables (99.5%), meat of all kinds (81.4%), ripe fruit (72.1%), vegetable oil (61.0%) and milk (46.7%). Rice (high in glucose) and meat (high in protein) are the two most common essential foods mainly used to provide a high percentage of energy and protein to meet the people's daily needs. Asian in general and Vietnamese people, in particular, use them as regular foods and in large quantity, stable and long-lasting food and these foods themselves constitute an indispensable component of the diet and are the main dishes in every family's daily meal. However, the proportion of subjects who ate a reasonable portion of rice in a meal of diabetics (1 small bowl or 1 full bowl) was only 36.9% and 21.9%, respectively. Meanwhile, the proportion of eating rice is not reasonable for these people: 25.6% consumed 1/2 bowl of rice/meal (slightly less), 9.8% and 5.8% consumed two small bowls or two full bowls (slightly too much). Among subjects who eat meat

regularly every day, the percentage of people who eat pork is the majority (73.1%), while eating poultry meat which is good for diabetics only accounted for 20.4%; The proportion of subjects eating meat in boiled/steamed and braised forms was more reasonable for people with diabetes (32.6% and 38.0%). The rate of eating processed meat is not good for people with diabetes, such as fried (17.8%), processed cold meat (5.1%). Instead of eating meat, foods that provide protein for the body, the percentage of subjects eating fish and seafood is good for diabetics, with a frequency of 3 - 4 times/week was 85.0% higher than the results by Vu Thi Ngat et al. (80.0%) [6].

Regarding green vegetables: (vegetables, tubers, fruits of all kinds) providing vitamins and high in fiber are very necessary and reasonable foods for people with diabetes, with a regular daily use rate of 99.5%, this rate was higher than the research results by Vu Thi Ngat et al. (98.3%) [6]. The study results also showed that the frequency of subjects eating green vegetables in a processed form is suitable for diabetics such as cook soup (94.5%), boiled (85.5%). Meanwhile, the frequency of subjects eating green vegetables in a processed form that is not suitable for diabetics is still high, such as fried with oil/fat (38.1%), pickles/salted tomatoes (30.6%). The research results also show that although the percentage of subjects who eat green vegetables regularly every day is very high (99.5%), only 25.0% of the subjects eat 5 standard units of vegetables greens/1 day (equivalent to 400g of vegetables) as recommended by the World Health

Organization (WHO) [10]. Thus, the majority of the subjects (75.0%) ate green vegetables on a daily basis, but in less quantity than recommended by WHO. Our rate is higher than in the study by Bui Trung Nam et al. (44.8%) [3].

Regarding the habit of eating ripe fruits: There were 434/602 subjects who regularly eat ripe fruit every day, accounting for 72.1%. In which, 6 fruits with a low glycemic index (guava, apple, orange, grapefruit, pear, papaya, grape) had an average eating rate of 27.1% (the highest was guava: 41.9%; the lowest was papaya: 12.8%). However, the number of subjects who ate fruits with medium glycemic index and high glycemic index (banana, mango, litchi/longan, pineapple) had an average rate of 9.9% (the highest was banana: 16.8%; low especially pineapple: 6.0%). Regarding how to eat ripe fruit: 1 fruit to 2 types of fruit/ each time is reasonable for people with diabetes (34.6% and 45.6%). While the rate of eating ≥ 3 types of fruit/each time is not reasonable, accounting for 19.8%. Eating ripe fruit in the form of whole fruit or sliced/piece is reasonable for people with diabetes, accounting for the highest proportion (4.8% + 83.2% = 88.0%), however, there are still 12.0% of subjects who eat in the form of smoothies/juices which are not good for people with diabetes. In terms of the time of eating ripe fruit during the day: The number of people who eat ripe fruit from 2 hours or more after the main meal is very reasonable, with diabetes accounting for a low rate (41.2%), while the proportion of subjects eating ripe fruit daily at times that can

increase blood sugar for people with diabetes such as eating less than 2 hours after the main meal (21.9%), eating right after the main meal (19.8%) and eat at any time (12.0%).

2. Medication adherence in the treatment of diabetes

The results showed that the rate of adherence to taking or injecting drugs exactly as prescribed by doctors in the past 6 months was 84.6% and non-compliance was 15.4%. This result is higher than the study result by Le Thi Huong Giang et al. (2013), showing that the rate of diabetes patients treated as outpatients at 198 hospitals who adhered to drug treatment was 63.3% [5], but it is lower than the results of the study by Do Hong Thanh et al (2017 - 2018), showing that the percentage of patients taking enough drugs as prescribed by the doctor was 86.6% [5] and also lower than the study results by Gomes-Villas Boas L. C et al. (2012) showed that the rate of drug adherence was 95.7% [12].

Forgetting to take medicine: Among the 86 subjects who forgot to take medicine, forgetting the pill (57.0%) was higher than forgetting the injection (43.0%). This result is similar to the research result by Do Hong Thanh et al. (55.7% forgot the pill and 44.3% forgot the injection) [7]. The main reason for forgetting medication is not remembering (61.2% for pills and 67.6% for injections); Other reasons such as busy work, long distance business trip without taking medicine or no reminder were 38.8% (pills) and 32.4% (injections). This result is similar to the result by Do Hong Thanh et al. [7]. Most of patients

threw away the medicine (55.1% and 62.1%). Rates of oral and compensating injections in the next time were found in 26.5% and 16.2%. A patient forgets to take medicine, especially an injection, can cause blood sugar to rise. However, in principle, doctors often recommend that patients should check their blood sugar and contact the doctor directly prescribing the patient for support. Because the handling of missed doses of insulin depends on many factors: insulin type, time of missed dose detection, blood sugar index... If the type of insulin the patient taking is in the long-acting group and the time of detecting the missed dose is not more than 2 hours, the doctor may order the patient to make up for the injection and adjust the time for the next dose. In some cases, patients may need to take rapid-acting insulin or simply monitor and continue injecting insulin as usual. In fact, the study results also showed that only 18.4% of the subjects who forgot the pill and 21.7% of the subjects who forgot to take the injection asked for a doctor's advice for help in dealing with the forgotten medication. The results of our study on the management of patients' forgetfulness are consistent with the results by Do Hong Thanh et al. [7]. Therefore, it is necessary to strengthen the knowledge about drug adherence in diabetes treatment for patients so that they can take the initiative to take/inject drugs at the correct dose, on time, and according to the doctor's instructions. At the same time, doctors also need to have a responsibility to coordinate with patients, pay attention and remind patients to ensure reasonable, effective, and safe drug usage.

CONCLUSIONS

A cross-sectional descriptive study to evaluate nutritional knowledge and practice, adherence to medication in the treatment of T2D, by a questionnaire on 602 outpatients at Agriculture General Hospital. The main findings are:

Knowledge about choosing the right food for people with diabetes was limited: 5 food groups should be consumed (69.3%), 7 food groups should be limited (66.9%), and 4 food groups should not eat/drink (83.1%).

Practicing daily foods regularly was not suitable for T2D, mainly rice (100%), meat of all kinds (81.4%) and ripe fruits (72.1%). Reasonable foods for T2D people reached a low rate: 1 bowl of rice or 1 bowl full (36.9% and 21.9%); boiled/steamed or braised meat (32.6% and 38.0%); green vegetables reaches ≥ 5 standard units/day (25.0%); ripe fruit from 2 hours or more postprandial of the main meal (41.2%).

Adherence to medication in the treatment of T2D was not high enough (84.6%), with a 15.4% rate of non-compliance rate.

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