

# Healthy lifestyles

## for patients with diabetes

*A noncommunicable disease education manual for primary health care professionals and patients*







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The Noncommunicable Disease Education Manual for Primary Health Care Professionals and Patients results from the contributions and hard work of many people. Its development was led by Dr Hai-Rim Shin, Coordinator, and Dr Warrick Junsuk Kim, Medical Officer, of the Noncommunicable Diseases and Health Promotion unit at the WHO Regional Office for the Western Pacific (WHO/WPRO/NCD) in Manila, Philippines.

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# Noncommunicable disease education manual for primary health care professionals and patients

## Part 1 Prevention and management of hypertension

- Module 1 Diagnosis and management
- Module 2 Healthy lifestyles
- Module 3 Healthy eating habits
- Module 4 Low-salt diet
- Module 5 Physical activity
- Module 6 Medication and management of associated diseases
- Module 7 Complication prevention

## Part 2 Prevention and management of diabetes

- Module 1 Diagnosis and management
- **Module 2 Healthy lifestyles** ◀ YOU ARE HERE
- Module 3 Healthy eating habits 1
- Module 4 Healthy eating habits 2
- Module 5 Physical activity
- Module 6 Taking care of yourself in daily life
- Module 7 Complication prevention

## Part 3 Quit smoking

# How to use this manual

This book is one of fifteen modules of the “Noncommunicable disease education manual for primary health care professionals and patients”. This manual is intended to provide health information on the prevention and control of hypertension and diabetes.

This will be used in the form of a flip chart for health professionals to educate their patients with either hypertension or diabetes.

Diagnosis and management for patients with hypertension

**Blood pressure target**

Systolic blood pressure

Under 140 mmHg

Diastolic blood pressure

Under 90 mmHg

\*Age more than 60: blood pressure to be controlled below 150/90 mmHg

FOR PATIENTS

## FOR PATIENTS

On one side of the flip chart is the ‘**For patients**’ page. This side has simple images and key messages that are easy to understand. However, health professionals may need to provide education for patients to fully understand the content.

Diagnosis and management for patients with hypertension

**Blood pressure target**

**Patient education**

- Blood pressure below 140/90 mmHg is generally advised to prevent complications.
- However, blood pressure targets can be adjusted according to age, number and type of risk factors, and associated diseases.
- Therefore, if you have hypertension, you should consult your physician to set a target after evaluating your current health status and risk factors.

Systolic blood pressure

Under 140 mmHg

Diastolic blood pressure

Under 90 mmHg

\*Age more than 60: blood pressure to be controlled below 150/90 mmHg

**Professional information**

Target blood pressure

- According to the Eighth Joint National Committee (JNC8), those over age 60 are advised that their target blood pressure should be below 150/90 mmHg.
- Target blood pressure should be below 140/90 mmHg for hypertension combined with cardiovascular disease and atherosclerosis.
- For those under age 60 maintain below 140/90 mmHg, those over age 60 maintain below 150/90 mmHg.

REFERENCES

World Health Organization. Guidelines for the management of high blood pressure in adults: report from the regional committees for the World Health Organization (JNC8). 2013. <http://www.who.int>

FOR PHYSICIANS

## FOR PHYSICIANS

On the other side of the flip chart is the ‘**For physicians**’ page. This side includes information that the health professional can read out to the patient during counselling. Professional information is also provided for further understanding. A small image of the ‘For patients’ side is included so that the health professional is aware of what the patient is looking at.

This publication is intended to serve as a template to be adapted to national context. Images and graphs that have been watermarked should be replaced with images or graphs that represent the national situation. If assistance is required, or if you have any questions related to the publication, please contact the Noncommunicable Diseases and Health Promotion unit at WHO Regional Office for the Western Pacific ([wproncd@who.int](mailto:wproncd@who.int)).

# Table of contents



## Module 2

### **Healthy lifestyles** for patients with **diabetes**

- 1** Healthy lifestyles for patients with diabetes
- 3** Healthy eating for patients with diabetes (1)
- 5** Healthy eating for patients with diabetes (2)
- 7** Healthy eating for patients with diabetes (3)
- 9** Healthy eating for patients with diabetes (4)
- 11** Effects of physical activity on patients with diabetes
- 13** Physical activity for patients with diabetes
- 15** Intensity of physical activity
- 17** Example of a one-day exercise schedule
- 19** Diabetes and smoking
- 21** How can I quit smoking?
- 23** Diabetes and harmful use of alcohol (1)
- 25** Diabetes and harmful use of alcohol (2)
- 27** Take-home message

# Healthy lifestyles for patients with diabetes



Eat healthy



Be physically active



Quit smoking



Stop harmful use of alcohol



# Healthy lifestyles for patients with diabetes

## Patient education

- Eating healthy, being physically active, quitting smoking and stopping harmful use of alcohol are important lifestyle factors for diabetes management.

## Professional information

- Major types of diabetes are type 1 diabetes, type 2 diabetes and gestational diabetes.



Eat healthy



Be physically active



Quit smoking



Stop harmful use of alcohol

REFERENCES:

Diabetes basic theory course. Centers for Disease Control and Prevention, Republic of Korea. 2016. ([http://www.kncd.org/down/sub09/01/9\\_1\\_2\\_1.pdf](http://www.kncd.org/down/sub09/01/9_1_2_1.pdf), accessed 28 September 2016).  
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 International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.

# Healthy eating for patients with diabetes (1)

- Eat **balanced** meals.
- Eat a **reasonable amount** of calories.
- Eat **regularly** at the right time (do not skip meals to keep your blood sugar level down).



# Healthy eating for patients with diabetes (1)

## Patient education

- For diabetic patients, healthy eating does not mean restricting certain types of food.
- Plan a healthy, balanced meal, eat regularly and consume a proper amount of calories.
  - Eat **balanced** meals.
  - Eat a **reasonable amount** of calories.
  - Eat **regularly** at the right time (do not skip meals to keep your blood sugar level down).



## Professional information

- All diabetic and pre-diabetic patients should receive individual counselling on healthy eating (recommendation grade I/evidence level A).
- Generally, it is recommended that 50–60% of total caloric intake should be carbohydrates, 15–20% protein and 25% fat.
- However, the proportion of each nutrition group can be individualized depending on the patient's eating habits, preference and goal of treatment (recommendation grade IIb/evidence level D).
- For carbohydrates, a low glycemic index is preferred, including grains, beans, fruit, vegetables and dairy products (recommendation grade IIb/ evidence level B).
- Foods high in unsaturated fats are recommended, while saturated fats or trans fats are not recommended (recommendation grade IIb/evidence level B).

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American Diabetes Association. Standards of medical care in diabetes—2015. *Diabetes Care*, 2015.

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Ohkuma, T., et al. Impact of eating rate on obesity and cardiovascular risk factors according to glucose tolerance status: the Fukuoka Diabetes Registry and the Hisayama Study. *Diabetologia*, 2013, 56.1: 70-77.

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## Healthy eating for patients with diabetes (2)

### 3. Eat a balanced meal: a wide variety from all food groups.

Food group	Examples
<b>Carbohydrates</b>	Bread, pasta, sweet potato
<b>Proteins</b>	Meat, fish, egg, beans, tofu, squid, clam
<b>Vegetables</b>	Cucumber, carrot, seaweed
<b>Fats</b>	Cooking oil, sesame oil, butter, walnut, pine nut, peanuts
<b>Dairy</b>	Milk, yogurt, cheese
<b>Fruit</b>	Apple, pear, strawberry, grape, tangerine, banana

# Healthy eating for patients with diabetes (2)

## Patient education

- Eating a balanced meal is important.
- The food exchange table divides food into six categories: carbohydrates, proteins, vegetables, fats, dairy and fruit.
- It is important to eat a wide variety from all food groups, and to eat different foods in the same group.

Eat a balanced meal: a wide variety from all food groups.

Food group	Examples
<b>Carbohydrates</b>	Bread, pasta, sweet potato
<b>Proteins</b>	Meat, fish, egg, beans, tofu, squid, clam
<b>Vegetables</b>	Cucumber, carrot, seaweed
<b>Fats</b>	Cooking oil, sesame oil, butter, walnut, pine nut, peanuts
<b>Dairy</b>	Milk, yogurt, cheese
<b>Fruit</b>	Apple, pear, strawberry, grape, tangerine, banana

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Healthy Eating. Nhlbi.nih.gov. 2016. ([https://www.nhlbi.nih.gov/health/educational/lose\\_wt/eat](https://www.nhlbi.nih.gov/health/educational/lose_wt/eat), accessed 28 September 2016).

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## Healthy eating for patients with diabetes (3)

### 2. Eat a reasonable amount of calories.



A 600 kcal meal plan as part  
of 1800 kcal per day



Reduce the  
amount of your  
main source of  
carbohydrates  
to two thirds.



A 500 kcal meal plan as part  
of 1500 kcal per day

# Healthy eating for patients with diabetes (3)

## Patient education

- Secondly, it is important to eat a reasonable amount of calories.
- Every person differs in their physical state and activity level.
- Therefore, the optimal amount of calorie intake depends on the individual. If you overeat, blood sugar levels rise abnormally, while skipping a meal results in hypoglycaemia.
- The picture on the left shows a 600 kcal meal plan for a person consuming a total of 1800 kcal per day.
- If you are overweight, you can reduce total caloric intake by reducing the amount of rice, breads, and meats on your plate.
- Reducing a full bowl of rice by one third will result in 500 kcal per meal, and 1500 kcal per day.

A 600 kcal meal  
plan as part of  
1800 kcal per day



Reduce the  
amount of your  
main source of  
carbohydrates  
to two thirds.



A 500 kcal meal  
plan as part of  
1500 kcal per day

### REFERENCES:

Diabetes basic theory course. Centers for Disease Control and Prevention, Republic of Korea. 2016. ([http://www.kncd.org/download/sub09/01/9\\_1\\_2\\_1.pdf](http://www.kncd.org/download/sub09/01/9_1_2_1.pdf), accessed 28 September 2016).  
Ju, Dal Lae, et al. Korean food exchange lists for diabetes: revised 2010. Korean Journal of Nutrition, 2011, 44.6: 577-591.

# Healthy eating for patients with diabetes (4)

## 1. Eat at the right time.

- 3–5 times a day, at set times
- Take your time and eat **slowly** at regular meal times.



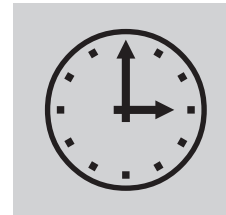
Breakfast



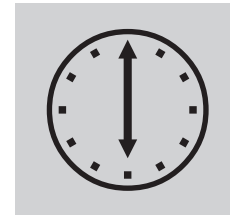
Snack



Lunch



Snack



Dinner



# Healthy eating for patients with diabetes (4)

## Patient education

- First of all, eat three meals every day at the same time.
- Many people, especially busy professionals, tend to skip breakfast and eat excessively during lunch or dinner.
- However, you should be aware that overeating raises blood sugar levels.
- It is important to eat breakfast, lunch and dinner every day.
- It is recommended that snacks be taken at least two hours after a meal, when blood sugar level is no longer increasing.



Breakfast



Snack



Lunch



Snack

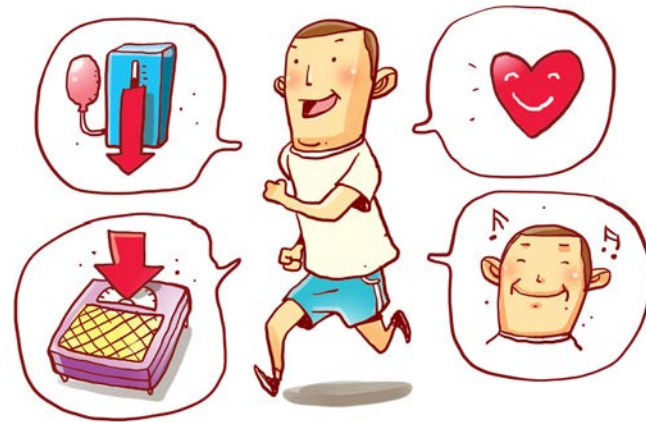


Dinner

# Effects of physical activity on patients with diabetes

## Why exercise?

- Helps reduce weight
- Decreases risk factors
  - decreases blood pressure
  - decreases blood cholesterol levels
  - enables better blood sugar level control
- Prevents complications
  - prevents atherosclerosis
  - prevents angina, myocardial infarction and stroke
- Improves quality of life and relieves stress



# Effects of physical activity on patients with diabetes

## Patient education

- When a patient with hypertension or diabetes undergoes regular exercise, blood pressure, blood sugar levels and blood cholesterol levels decrease, preventing the patient from developing atherosclerosis, which leads to ischemic heart disease, angina and myocardial infarction, as well as stroke.
- Preventing complications and early death is the ultimate goal.

## Professional information

- The average reduction from physical activity alone is 7.4 mmHg for systolic and 5.8 mmHg for diastolic blood pressure.
- Stroke risk is decreased by 35–40% and cardiovascular disease risk by 20–25% when diastolic blood pressure is decreased by 5–6 mmHg.
- Physical activity prevents atherosclerosis, which further prevents cardiovascular diseases.

## Why exercise?

- Helps reduce weight
- Decreases risk factors
  - decreases blood pressure
  - decreases blood cholesterol levels
  - enables better blood sugar level control
- Prevents complications
  - prevents atherosclerosis
  - prevents angina, myocardial infarction and stroke
- Improves quality of life and relieves stress



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# Physical activity for patients with diabetes

## For patients without complications:

### Aerobic exercise mainly

- More than three days a week.
- Do not rest for more than two consecutive days.

## Aerobic



### Additional muscle strengthening exercise

- 2–4 times a week

\* For patients with complications, recommendations differ according to severity.

## Muscle strengthening (weight-bearing)



Should be light enough to lift at least eight times comfortably



Do not lift weights that are too heavy

# Physical activity for patients with diabetes

## Patient education

- Exercising reduces blood sugar levels, burns calories and helps prevent complications of diabetes. Regular physical activity also helps relieve stress and has a positive effect on mental health.
- Do moderate intensity aerobic exercise for more than 150 minutes per week.
- Exercise at least three times per week, and do not rest for more than two consecutive days.
- Muscle strengthening exercises should be done together 2–4 times per week if there are no other contraindications.

## Professional information

- Recommend moderate intensity physical activity (50–70% of maximal heart rate, which is 220 minus age).
- All diabetic patients are recommended to exercise if there are no contraindications. However, depending on the physical state of the patient, intensity and frequency of physical activity must be individualized.
- If there is uncontrolled hypertension, severe peripheral neuropathy, autonomic neuropathy, history of diabetic foot, or proliferative diabetic retinopathy, risk of exercising must be evaluated and certain types of physical activity may need to be avoided.

### Aerobic



### Muscle strengthening (weight-bearing)



### For patients without complications:

#### Aerobic exercise mainly

- More than three days a week.
- Do not rest for more than two consecutive days.

#### Additional muscle strengthening exercise

- 2–4 times a week

\* For patients with complications, recommendations differ according to severity.

#### REFERENCES:

American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.  
International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.

## Intensity of physical activity



### Light exercise

- Walking, cycling slowly



### Moderate exercise

- Brisk walking, climbing stairs, fast cycling
- At least **150 min/week**



### Vigorous exercise

- Fast swimming, jogging, jump rope
- At least **75 min/week**

# Intensity of physical activity

## Patient education

- Aerobic physical activity can be divided into three categories according to intensity: light, moderate and vigorous physical activity.
- Walking slowly is an example of light physical activity, brisk walking or climbing stairs are examples of moderate physical activity, and jogging and skipping are vigorous physical activities.
- You can decide which intensity and type of physical activity you can do and for how long according to your physical state and preference.



### Light exercise

- Walking, cycling slowly



### Moderate exercise

- Brisk walking, climbing stairs, fast cycling
- At least **150 min/week**



### Vigorous exercise

- Fast swimming, jogging, jump rope
- At least **75 min/week**

#### REFERENCES:

Diabetes basic theory course. Centers for Disease Control and Prevention, Republic of Korea. 2016. ([http://www.kncd.org/down/sub09/01/9\\_1\\_2\\_1.pdf](http://www.kncd.org/down/sub09/01/9_1_2_1.pdf), accessed 28 September 2016).

American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.

International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.

## Example of a one-day exercise schedule

	Time	Type	Intensity
Warm up	5–20 minutes	Walking, stretching	Light to moderate
Main exercise	20–40 minutes	Aerobic exercise	Moderate to vigorous
	20–30 minutes	Muscle-strengthening exercise	
Cool down	10 minutes	Stretching muscles that were used	Light to moderate



# Example of a one-day exercise schedule

## Patient education

- This table shows a good example of an exercise schedule.
- Exercise time and intensity may vary depending on what type of physical activity you choose to do.
- First of all, you will start with a 5–20 minute light warm up, such as stretching or walking slowly.
- For the main exercise, a combination of aerobic and muscle-strengthening exercises are recommended.
- Between 20–40 minutes of aerobic exercise followed by 20–30 minutes of muscle strengthening is ideal.
- To end your exercise schedule, stretch the muscles you used for about 10 minutes.

	Time	Type	Intensity
Warm up	5–20 minutes	Walking, stretching	Light to moderate
Main exercise	20–40 minutes	Aerobic exercise	Moderate to vigorous
	20–30 minutes	Muscle-strengthening exercise	
Cool down	10 minutes	Stretching muscles that were used	Light to moderate

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 American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.  
 International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.

# Diabetes and smoking

- Smoking increases the risk of cardiovascular diseases.
- Smoking increases the risk of type 2 diabetes.
- Smoking increases the risk of complications associated with diabetes.
- Smoking worsens symptoms associated with diabetes complications.



# Diabetes and smoking

## Patient education

- All patients with diabetes must quit smoking. Active (as distinct from passive) smoking increases your risk of developing type 2 diabetes.
- Smoking also increases the risk of cardiovascular diseases, raises blood cholesterol and triglyceride levels.
- Further, smoking increases the risk of complications associated with diabetes and worsens symptoms associated with complications.

- Smoking increases the risk of cardiovascular diseases.
- Smoking increases the risk of type 2 diabetes.
- Smoking increases the risk of complications associated with diabetes.
- Smoking worsens symptoms associated with diabetes complications.



### REFERENCES:

American Diabetes Association. Standards of medical care in diabetes—2015. *Diabetes Care*, 2015.  
International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.  
World Health Organization (2016) Global Report on Diabetes.

# How can I quit smoking?

## Overcome the smoking habit!

- Get rid of ashtrays and lighters.
- Inform friends and family that you have quit smoking.

## Overcome nicotine dependence!

- Nicotine replacement therapy:
  - nicotine patch, gum
- Visit a doctor or community health centre for counselling.



# How can I quit smoking?

## Patient education

- Nicotine is an addictive substance in tobacco that can affect your nervous system.
- When you quit smoking, the supply of nicotine to your brain stops and you feel withdrawal symptoms.
- To overcome nicotine dependence and withdrawal symptoms, nicotine replacement therapy can help.
- It is also important to get support by informing people around you that you are planning to quit smoking.

### Overcome the smoking habit!

- Get rid of ashtrays and lighters.
- Inform friends and family that you have quit smoking.

### Overcome nicotine dependence!

- Nicotine replacement therapy:
  - nicotine patch, gum
- Visit a doctor or community health centre for counselling.



#### REFERENCES:

American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.  
International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.

# Diabetes and harmful use of alcohol (1)

## Adverse effects of harmful use of alcohol in diabetic patients:

- Obesity: alcohol is high in calories, low in nutrients.
- Hypoglycaemia induced 8–12 hours after drinking.
- Acute complications may follow heavy drinking.
- Elevated blood triglyceride levels.
- Aggravated peripheral neuropathy.



# Diabetes and harmful use of alcohol (1)

## Patient education

- There are many adverse health effects of harmful alcohol use.
- As alcohol is not a nutrient, drinking alcohol means you are just consuming empty calories, leading to obesity.
- Heavy drinking can cause acute complications.
- Drinking also increases blood triglyceride levels and worsens peripheral neuropathy.

## Professional information

- Alcohol contains a lot of calories without any nutrition.
- For those who need to reduce weight, it is best to avoid alcohol.
- There is always a risk of hypoglycaemia if combined with hypoglycaemic agents or insulin.
- Restrict alcohol intake to one glass per day for adult women, and two glasses per day for men.

### Adverse effects of harmful use of alcohol in diabetic patients:

- Obesity: alcohol is high in calories, low in nutrients.
- Hypoglycaemia induced 8–12 hours after drinking.
- Acute complications may follow heavy drinking.
- Elevated blood triglyceride levels.
- Aggravated peripheral neuropathy.



#### REFERENCE:

American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.

## Diabetes and harmful use of alcohol (2)

- Drinking alcohol is not advisable if you have liver disease, high cholesterol level, or obesity.
- Small amounts of alcohol are tolerable for patients whose blood sugar level is well controlled.
- Do not drink alcohol on an empty stomach or after exercising as this may lead to hypoglycaemia.
- The morning after drinking, check your blood sugar level. To prevent hypoglycaemia, be sure to eat breakfast.





# Diabetes and harmful use of alcohol (2)

## Patient education

- Alcohol contains a lot of calories poor in nutrients, so for those who need to lose weight it is best not to drink alcoholic drinks.
- There is always a risk of hypoglycaemia if a patient on hypoglycaemic agents or insulin drinks alcohol.
- Restrict consumption to one glass per day for adult women, two glasses per day for men.

- Drinking alcohol is not advisable if you have liver disease, high cholesterol level, or obesity.
- Small amounts of alcohol are tolerable for patients whose blood sugar level is well controlled.
- Do not drink alcohol on an empty stomach or after exercising as this may lead to hypoglycaemia.
- The morning after drinking, check your blood sugar level. To prevent hypoglycaemia, be sure to eat breakfast.



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American Diabetes Association. Standards of medical care in diabetes—2015. *Diabetes Care*, 2015.  
International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.

# Take-home message

## Healthy lifestyles



Eat healthy



Be physically active



Quit smoking



Stop harmful use of alcohol

- Eat **balanced** meals.
- Eat a **reasonable amount** of calories.
- Eat **regularly** at the right time.



