



衛生防護中心  
Centre for Health Protection

# Non-Communicable Diseases Watch

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## Health Tips

To reduce the risk of developing fatty liver, members of the public are urged to maintain an optimal weight and waistline, eat a balanced diet, be physically active, refrain from drinking, control diabetes, maintain normal blood lipid levels, and use medications carefully.

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## Fatty Liver - A Growing Public Health Issue

Fatty liver (or fatty liver disease) is the collection of too much fat inside liver cells. Some people with fatty liver may not have any symptoms and complications at all. In certain people, however, fatty liver may be accompanied by liver inflammation and cirrhosis. At its most severe form, fatty liver can progress to liver failure.

While excessive alcohol intake is an important cause of fatty liver, development of fatty liver is strongly associated with obesity, insulin resistance, diabetes, dyslipidaemia and hypertension and is regarded as the liver manifestation of metabolic syndrome. Other causes of fatty liver also include some nutritional factors (such as rapid weight loss or total parenteral nutrition), use of certain drugs (such as steroids or oestrogens) and infections (such as infection with the AIDS virus or hepatitis C virus).<sup>1</sup>

### Global Prevalence of Fatty Liver

Fatty liver is one of the most prevalent chronic liver diseases in affluent countries. It may affect persons of any age, including children. Depending on the operational definition and diagnostic criteria used, the reported point prevalence of fatty liver varied widely across countries and populations. In Western countries, the prevalence of non-alcoholic fatty liver disease (NAFLD) was estimated to be between 15% and 42% in the general population. In the Asia-Pacific region, epidemiological studies showed that 5% to 30% of adult population suffered from NAFLD.<sup>2</sup> However, the prevalence of fatty liver could be much higher among the 'high risk' populations. The condition was observed in up to 46% of heavy drinkers, 70% of people with type 2 diabetes, 76% of obese persons and 99% of patients undergoing bariatric surgery.<sup>3-5</sup> Among children, prior studies estimated the prevalence of NAFLD between 3% and 10% of the general paediatric population.<sup>5</sup> In the United States, fatty liver was found in 17% of adolescents aged 15-19 years at time of death.<sup>6</sup> However, the prevalence could increase to over 70% among obese children and adolescents.<sup>7</sup>

## Risk Factors for Fatty Liver in the Chinese Population

Epidemiological studies indicated that the major risk factors for fatty liver in China resembled those in the West and other regions of Asia, although there were critical differences between Western and Eastern populations in the extent of adiposity or chronic viral hepatitis.<sup>8,9</sup> When compared with the controls, a case-control study of 413 patients with fatty liver in Guangzhou area (South China) between January 1998 and May 2002 reported that the risk for fatty liver was roughly 20-fold higher in people with obesity, 18-fold higher in people who abuse alcohol, 3.5-fold higher in people with type 2 diabetes, 3-fold higher in people with elevated serum triglyceride, 84% higher in people with elevated serum low-density lipoprotein cholesterol, and 50% higher in people with elevated fasting plasma glucose.<sup>10</sup> Similarly, a cross-sectional study in Shanghai (East China) consisting 3 175 randomly selected non-institutionalised civilians aged 16 and above between October 2002 and April 2003 found about 32-fold increased risk for fatty liver in subjects with abdominal obesity or diabetes, and 22-fold increased risk in subjects with dyslipidaemia or hypertension. More importantly, clustering of metabolic risk factors would

further increase the risk that subjects with metabolic syndrome were found to have a 38-fold increased risk for fatty liver.<sup>11</sup> Another study on 9 094 healthy adults aged 18 and above who were working in Chengdu (Southwest China) and had received medical checkup at a hospital in 2007 also observed that obese heavy drinkers would have about 55-fold greater risk for fatty liver when compared with the controls. The corresponding risk was about 2-fold higher in heavy drinkers and 27-fold higher in subjects with obesity.<sup>12</sup>

### Local Situation

In Hong Kong, an outpatient-based study of 1 627 Chinese adults aged 20-65 in 2003 reported an overall prevalence of NAFLD of 15.9%. Obesity, dyslipidaemia, hypertension, overweight and diabetes were present in 58.2%, 42.6%, 38.3%, 32.4% and 29.1% of cases respectively. Compared with the controls, people with obesity, overweight and dyslipidaemia would have about 25-fold, 4-fold and 2-fold increased risk of NAFLD respectively.<sup>13</sup> Among children, another study on 86 obese children aged 7-18 years referred for medical assessment between January 2000 and December 2002 found that 77% of them (81% for boys; 68% for girls) had radiological evidence of fatty liver. While 38% of obese

children had mild degree of fatty liver, 24% and 16% were found to have moderate and severe fatty change in the liver respectively.<sup>14</sup>

People with fatty liver normally do not require hospital care. However, there were 149 episodes of in-patient discharges and deaths in Hospital Authority hospitals primarily attributable to fatty liver in 2009. While both genders contributed more or less the same of the 137 episodes (69 in males versus 68 in females) of in-patient discharges and deaths due to non-alcoholic fatty liver disease, males were responsible for all 12 episodes of in-patient discharges and deaths specific to alcoholic fatty liver disease. As shown in Table 1, the rate of in-patient discharges and deaths (per 100 000 population) due to fatty liver rose from less than 0.1 among children and young adults aged 24 and below, to the peak of 5.2 among people aged 55-64, then dropped to 2.9 among seniors aged 65 and above.<sup>15</sup> However, many patients with fatty liver might have been admitted for the associated abnormalities or consequences of the disease (such as liver cirrhosis, liver failure or unspecific liver diseases) but not fatty liver as the principal diagnosis. Thus, the figures had probably underestimated the disease burden of fatty liver in public hospitals.

**Table 1: Number (Rate) of episodes of in-patient discharges and deaths attributable to fatty liver in Hospital Authority hospitals by sex and age group, 2009**

	Number (Rate*)
<b>Sex</b>	
Male	81 (2.5)
Female	68 (1.8)
<b>Age group</b>	
14 and below	1 (0.1)
15-24	0 (0.0)
25-34	10 (0.9)
35-44	27 (2.3)
45-54	43 (3.4)
55-64	42 (5.2)
65 and above	26 (2.9)
<b>Total</b>	149 (2.1)

Note: \* Rate per 100 000 population in the respective group.

Sources: Hospital Authority and Census and Statistics Department.

## Watch Out for Fatty Liver

Fatty liver is often asymptomatic. When it exhibits symptoms, they are generally nonspecific, such as loss of appetite, nausea and vomiting, right upper quadrant discomfort and fatigue. For most cases, however, the disease is discovered incidentally by routine physical checks with blood tests showing unexplained abnormalities of the liver functions. Depending on the degree of fat infiltration in the liver, clinical features may include liver enlargement. Confirming the diagnosis of fatty liver would require imaging procedures (such as ultrasonography, computerized tomography scan or magnetic resonance imaging) or liver biopsy.

Treatment for fatty liver is usually aimed at eliminating the known risk factors and treating the underlying cause of the condition. In patients with alcohol-related fatty liver, abstinence from alcohol may reverse fatty liver changes. For patients with co-existing obesity, type 2 diabetes or hyperlipidaemia, making changes towards a healthier lifestyle are the primary recommendations. That includes eating a healthy diet and regular exercise to achieve gradual and sustained weight loss. Medications would sometimes be required to control the underlying medical diseases and complications. For fatty liver patients with progression to end-stage liver disease, liver transplantation may be required.





## Healthy Liver for a Healthy Life

Liver is the second largest organ in our body and performs many vital functions, including changing food into energy and removing harmful substances from our blood. Thus, taking good care of our liver is of utmost importance. Fatty liver is a preventable condition. If caught early in its development, it is largely reversible. Here are some ways that can reduce the risk of developing fatty liver or control the disease:

### **Maintain an optimal weight and waistline.**

Aim for a body mass index between 18.5 and 22.9, with a waist circumference not greater than 90 cm for men and 80 cm for women. Those trying to take weight off are advised to lose at a rate of 0.5 to 1 kg a week with a goal of about 10% body weight reduction achieved over 6 months. Reducing weight more quickly than this can increase the physiological strain following acute energy deficit and the risk of weight regain. If necessary, ask a doctor for help.

**Eat a balanced diet** that includes suitable amounts of grains and cereals (especially whole grains), lean meat without skin, fat-free or low fat dairy products, along with at least five daily servings of fruit and vegetables. Avoid foods that are high in sugar, fat or cholesterol. Keep salt intake to no more than 5 grams per day (about one level teaspoon).

**Be physically active** for maintaining a healthy weight and improving insulin sensitivity. Adults should aim for at least 150 minutes of moderate-intensity aerobic physical activity or equivalent amounts throughout the week. Children and adolescents should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily. Avoid prolonged sitting and limit sedentary habits, such as watching television. For those who have not been physically active in the past,

they should start out slowly and use a sensible ‘stepwise’ approach. For people suffering from morbid obesity or chronic diseases, they should consult their doctors for a customised exercise prescription if indicated.

**Refrain from drinking** because alcohol can induce liver damage. Limit consumption if drinking at all. In general, healthy men are advised not to exceed two standard drinks per day and non-pregnant women one standard drink per day. For pregnant women and nursing mothers, they should not drink at all.

**Control diabetes.** Work closely with the health care team for mapping out a customised disease management plan to maintain blood glucose level within the recommended range. Comply with the treatment regimes and have regular follow-up.

**Maintain normal blood lipid levels.** Keep cholesterol and triglycerides at healthy levels through a healthy plant-based diet and exercising regularly. Limit daily fat intake to not more than 30% of total daily energy, and saturated fat to less than 10%. For dietary cholesterol, it should be restricted to less than 300 mg per day.

**Use medications carefully.** Take medications exactly as prescribed by the doctor and follow the instructions on all over-the-counter drugs.

For more information about healthy living, please visit the Central Health Education Unit website of the Department of Health at <http://www.cheu.gov.hk>, or call the 24-hour Health Education Hotline at **2833 0111**.



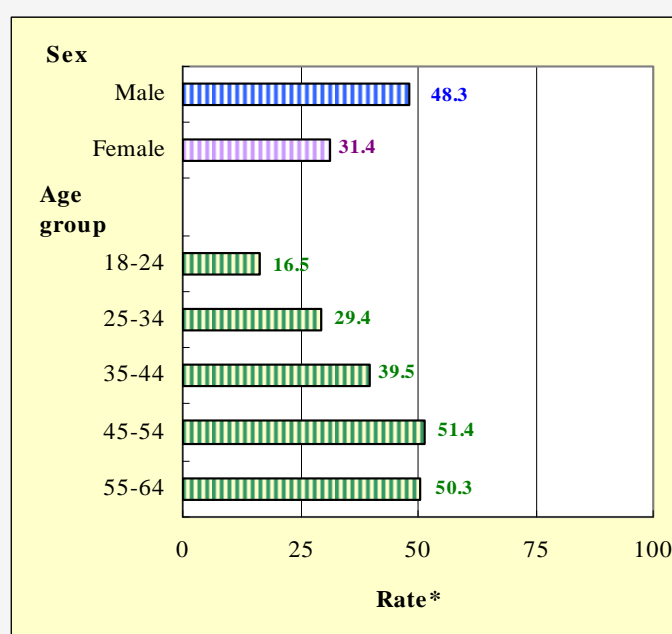
## Data Brief

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Being overweight or obese can lead to a wide range of health problems and shorten life expectancy. The Behavioural Risk Factor Survey conducted by the Department of Health (DH) in April 2010 observed that 39.2% of community-dwelling adults aged 18-64 in Hong Kong were classified as overweight or obese (defined as having a body mass index  $\geq 23.0$ ). The prevalence was higher in males (48.3%) and people aged 45-54 (51.4%).

Overweight and obesity is largely attributed to unhealthy eating and physical inactivity. To tackle the issue, the Working Group on Diet and Physical Activity drew up an Action Plan to Promote Healthy Diet and Physical Activity Participation in Hong Kong (Action Plan). It outlined specific actions that different government bureaux/departments and relevant parties have implemented or will implement to promote healthy diet and physical activity participation over the next few years in Hong Kong. A copy of the Action Plan can be found at the websites of the DH (<http://www.dh.gov.hk>) and Centre for Health Protection (<http://www.chp.gov.hk>), as well as the Change for Health website (<http://www.change4health.gov.hk>).



Note: \*Rate per 100 persons in the respective group.

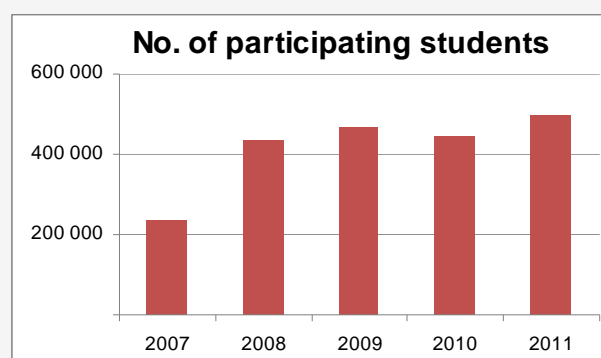
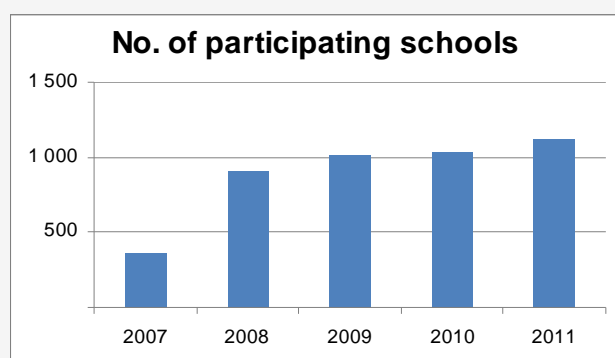
Source: Behavioural Risk Factor Survey, April 2010.





## A health promotion activity that attracts over 1 000 schools participating

Eating fruit can reduce the risk of heart disease, stroke and certain cancers. However, local surveys indicate that only barely over half of primary students have a habit of taking fruit at least twice a day. Hence, as an important component of the EatSmart@school.hk Campaign, DH has organised the annual 'Joyful Fruit Day' event since 2007 in collaboration with a number of organisations. The event aims to promote home-school cooperation and create a favourable atmosphere so that students are encouraged to maintain a habit of eating an adequate amount of fruit every day. The event has been well received by schools all along, with participation of 362 primary schools in 2007 to over 1 000 schools extending to the pre-primary and secondary school sectors in recent years.



In this school year, 27 April 2011 has been designated the 'Joyful Fruit Day'. We encourage schools to extend promotional activities for the following month till 26 May 2011 as the 'Fruit Month', so that more activities can be organized to maximise publicity impact. DH will support schools with provision of materials like banners, posters, leaflets as well as a variety of online resources.

For details, please visit the 'Joyful Fruit Day' webpage by clicking the 'Joyful Fruit Day' icon on the thematic webpage of <http://school.eatsmart.gov.hk>. You may enjoy a 'Joyful Fruit Day' theme song here as well!

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