

0 6

Data from 'The Million Women' survey in the UK was collected for over 15 years.

Scientists analysed the data to study the effect of consuming alcohol on liver disease.

The scientists:

- included 400 000 women who regularly consumed alcohol
- included 400 000 women who did **not** consume alcohol
- excluded women who already had a liver disease.

0 6 . 1

Age and gender were two factors controlled in this analysis.

Many other factors were also controlled.

Suggest **two** other factors which the scientists would have controlled.

[2 marks]

1 _____

2 _____

Question 6 continues on the next page

Turn over ►

The data was analysed for:

- women who drank alcohol with meals
- women who drank alcohol **not** with meals
- women who did **not** drink alcohol.

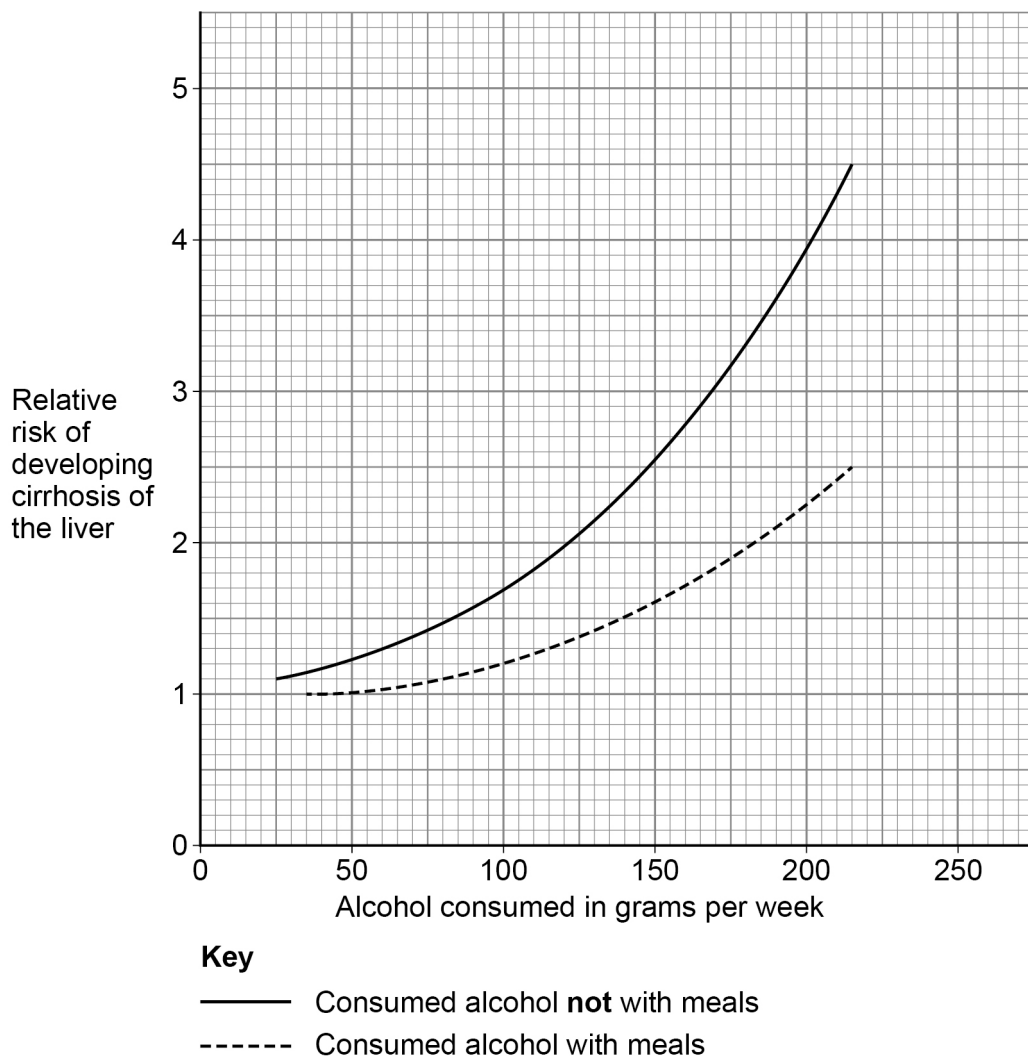
During the survey approximately 1500 women developed a liver disease called cirrhosis of the liver.

Scientists calculated the relative risk of developing cirrhosis of the liver for each group who consumed alcohol.

A relative risk of 1.0 means there was no statistical difference between the groups who did consume alcohol and the group who did **not** consume alcohol.

Figure 10 shows a summary of the results.

Figure 10



0 6 . 2 A woman drinks 150 g of alcohol per week **not** with meals.

The woman decides to change to drinking 150 g of alcohol per week with meals.

Calculate the percentage decrease in relative risk of developing cirrhosis of the liver for this woman.

[2 marks]

Percentage decrease = _____ %

0 6 . 3 One glass of wine contains 12 g of alcohol.

A different woman drinks two glasses of wine each day with her meals.

Calculate the relative risk of developing cirrhosis of the liver for this woman.

[2 marks]

Relative risk = _____

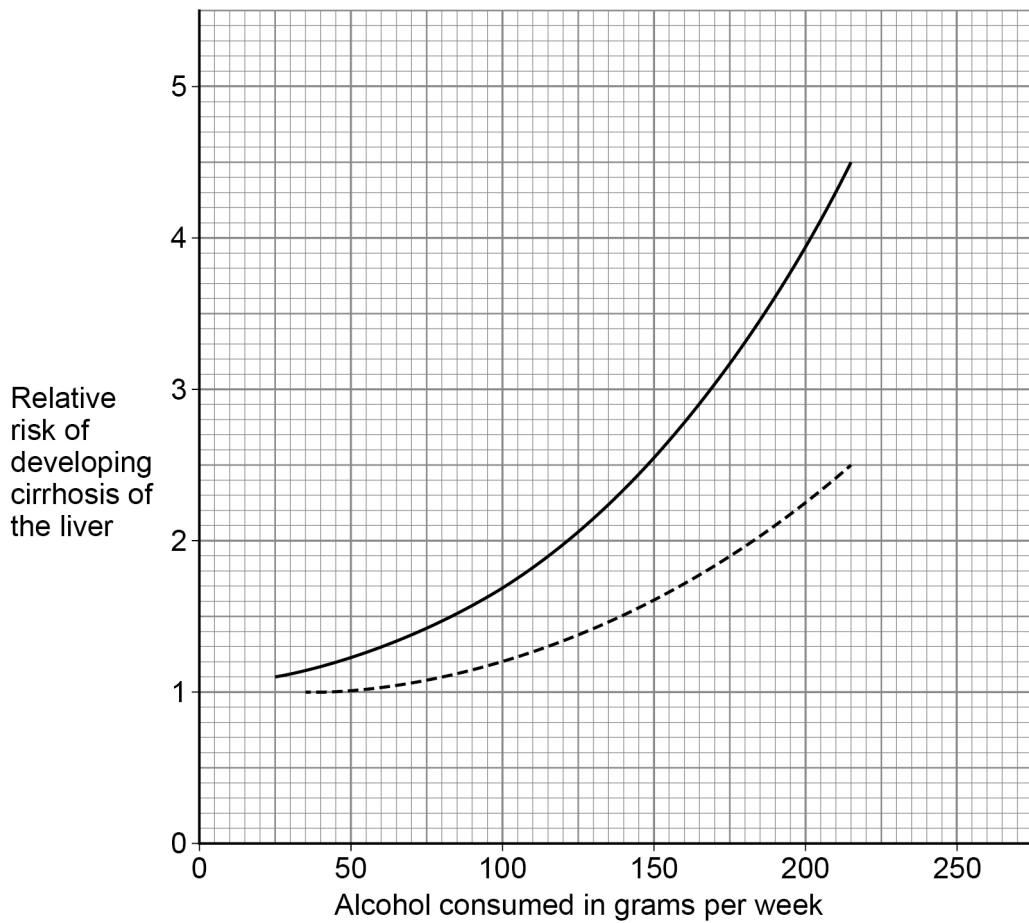
Question 6 continues on the next page

Turn over ►



Figure 10 is repeated below.

Figure 10



Key

- Consumed alcohol **not** with meals
- - - - Consumed alcohol with meals

0 6 . 4

Consuming alcohol with meals instead of not with meals decreases the relative risk of developing cirrhosis of the liver.

Give **two** other conclusions about the relative risk of developing cirrhosis of the liver related to alcohol consumption.

Use data from **Figure 10** in your answer.

[2 marks]

1 _____

2 _____



0 6 . 5

Suggest **two** reasons why the data is considered to be valid.

[2 marks]

1 _____

2 _____

0 6 . 6

Suggest **one** aspect of the survey which might reduce validity.

[1 mark]

0 6 . 7

Cirrhosis of the liver leads to liver failure.

Describe the effects of liver failure on the human body.

[4 marks]

15

Turn over for the next question

Turn over ►



<p>06.4</p>	<p>any two from:</p> <ul style="list-style-type: none"> • consuming alcohol increases the RR (with / without meals) and supporting data • consuming less than 50 g/week of alcohol with meals does not increase the RR • even (small amounts of alcohol at) 25 g/week increases the RR if not with meals 	<p>allow risk for RR throughout allow data in terms of number of glasses of wine</p> <p>allow increasing alcohol consumption increases the RR at an increasing rate</p> <p>allow any value between 35 and 60 g/week</p>	<p>2</p>	<p>AO3 4.2.2.6</p>
<p>06.5</p>	<p>any two from:</p> <ul style="list-style-type: none"> • large number in survey • long term / 15 year survey <p>} • well controlled</p>	<p>allow 800 000 in survey</p> <p>if neither mark awarded allow large study</p> <p>allow many controls</p>	<p>2</p>	<p>AO3 4.2.2.6</p>
<p>06.6</p>	<p>any one from:</p> <ul style="list-style-type: none"> • people underestimate / overestimate alcohol consumption • people may change (lifestyle / drinking) habits over time • some people may drink all their weekly alcohol at once 	<p>allow people lie about alcohol consumption or people lie about other named control variables</p> <p>ignore survey only tested women</p>	<p>1</p>	<p>AO3 4.2.2.6</p>

06.7	Level 2: Scientifically relevant facts, events or processes are identified and given in detail to form an accurate account.	3-4	AO2 4.4.2.3 4.2.2.1
	Level 1: Facts, events or processes are identified and simply stated but their relevance is not clear.	1-2	AO1 4.4.2.2 4.2.2.6
	No relevant content	0	4.2.2.5 4.5.3.3
	Indicative content Responses may refer to either total or partial liver failure <ul style="list-style-type: none"> • no bile made (in the liver) <ul style="list-style-type: none"> ○ fats / lipids are not emulsified ○ surface area of fats / lipids not increased ○ pH of small intestine will not be alkaline / neutralised ○ enzymes (in small intestine) will not work effectively or (named) food not digested / absorbed ○ so may lose weight • lactic acid not broken down / oxidised <ul style="list-style-type: none"> ○ accumulation of lactic acid in blood / body ○ lactic acid is toxic or body will be poisoned ○ oxygen debt higher / prolonged ○ so muscle pain / fatigue • proteins / amino acids will not be broken down (in liver) <ul style="list-style-type: none"> ○ (amino acids) not deaminated ○ amino acids not made into urea or will not form ammonia ○ (however) any ammonia formed is toxic ○ so accumulation of amino acids in blood / body • liver does not break down / remove other toxins (like alcohol) <ul style="list-style-type: none"> ○ toxins accumulate in blood / body ○ body will be poisoned ○ so pain or jaundice or swollen liver or portal hypertension occurs • glycogen stores will not be formed <ul style="list-style-type: none"> ○ cannot control blood glucose ○ so hyperglycaemia / hypoglycaemia / diabetes / coma may occur 		
Total		15	