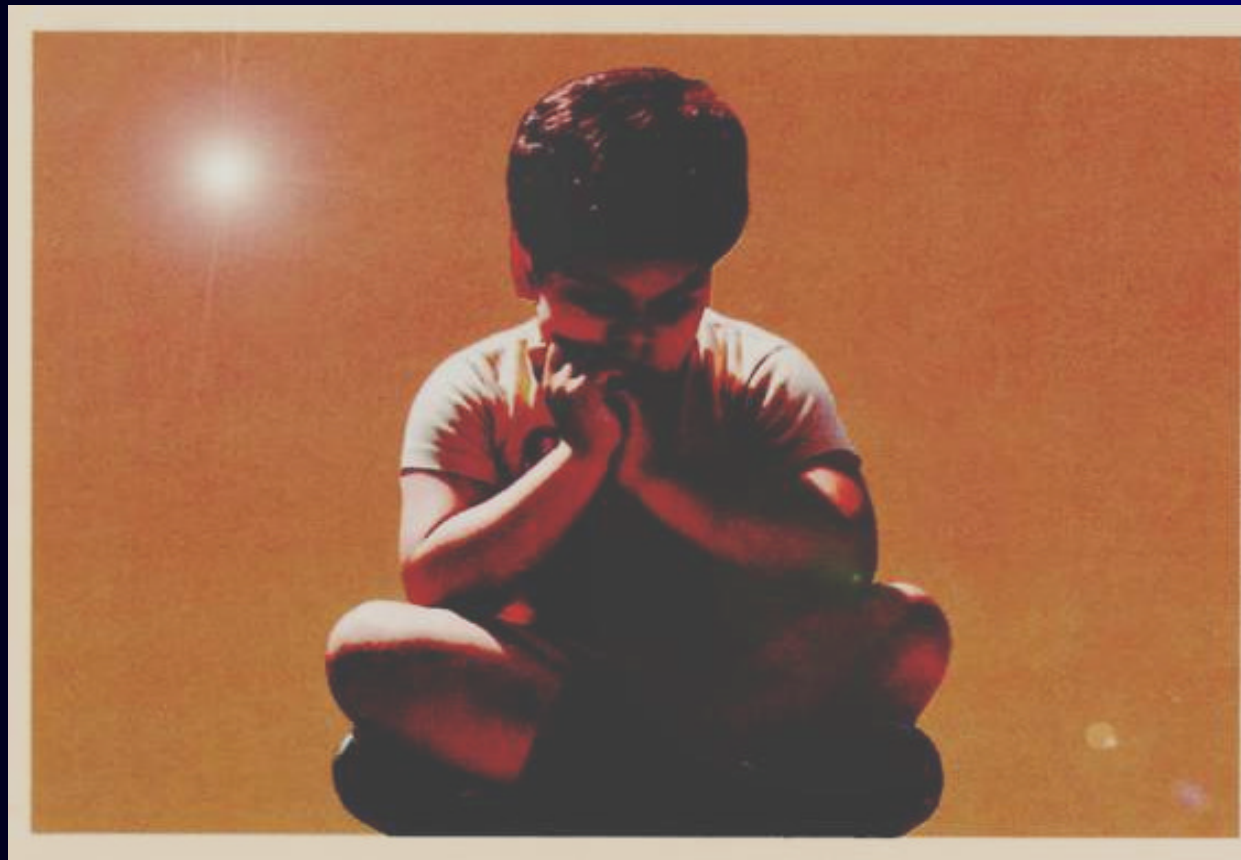


CHILDHOOD OBESITY IN GIBRALTAR

A POPULATION PREVALENCE CROSS-SECTIONAL SURVEY



PURPOSE OF THE STUDY

- Child and adult obesity never researched in Gibraltar before.
- New data to add to existing knowledge.
- Comparison with international data.
- Intervention programmes can be planned and evaluated.
- Causes of obesity in Gibraltar can be investigated.

SUBJECTS

Included

- All infant, middle and primary schoolchildren (4-12yrs).

Excluded

- Nursery schoolchildren
- Secondary schoolchildren
- Services/MOD schoolchildren
- Children with mental disabilities attending the special school and children who were wheelchair-bound.

CHILD GROWTH STANDARDS

- A child growth standard for the Gibraltar population of children and adolescents has never been compiled.
- The Tanner-Whitehouse 7-centile standards (derived from a particular British population in the 1970s) are routinely used by the GHA.
- These norms are not ideal for the interpretation of growth of children and adolescents in Gibraltar but were the standards chosen to define obesity for the purpose this study.

CHILD GROWTH STANDARDS cont.

- In 1990 new 9-centile UK growth charts replaced the Tanner-Whitehouse charts in Britain. These are more accurately representative of the current UK population. The new charts show that the average height of British children has increased steadily over the past generation.
- Body Mass Index (BMI) charts for children are now also available.

DEFINITION OF OBESITY

- “There has not been the same level of agreement over the classification of overweight and obesity in children as there has been in adults” WHO 1997.
- Several countries have devised their own growth charts and BMI-for-age charts using their own reference populations.
- BMI-for-age is the most frequently used index in Europe to define childhood obesity but cut-off points vary between countries.

DEFINITION OF OBESITY cont.

$$\% \text{ wt for ht for age} = \frac{\text{actual weight}}{\text{wt for age at ht for age centile}} \times 100$$

Underweight = <90%

Normal weight = 90-110%

Overweight = 111-120%

Obese = >120%

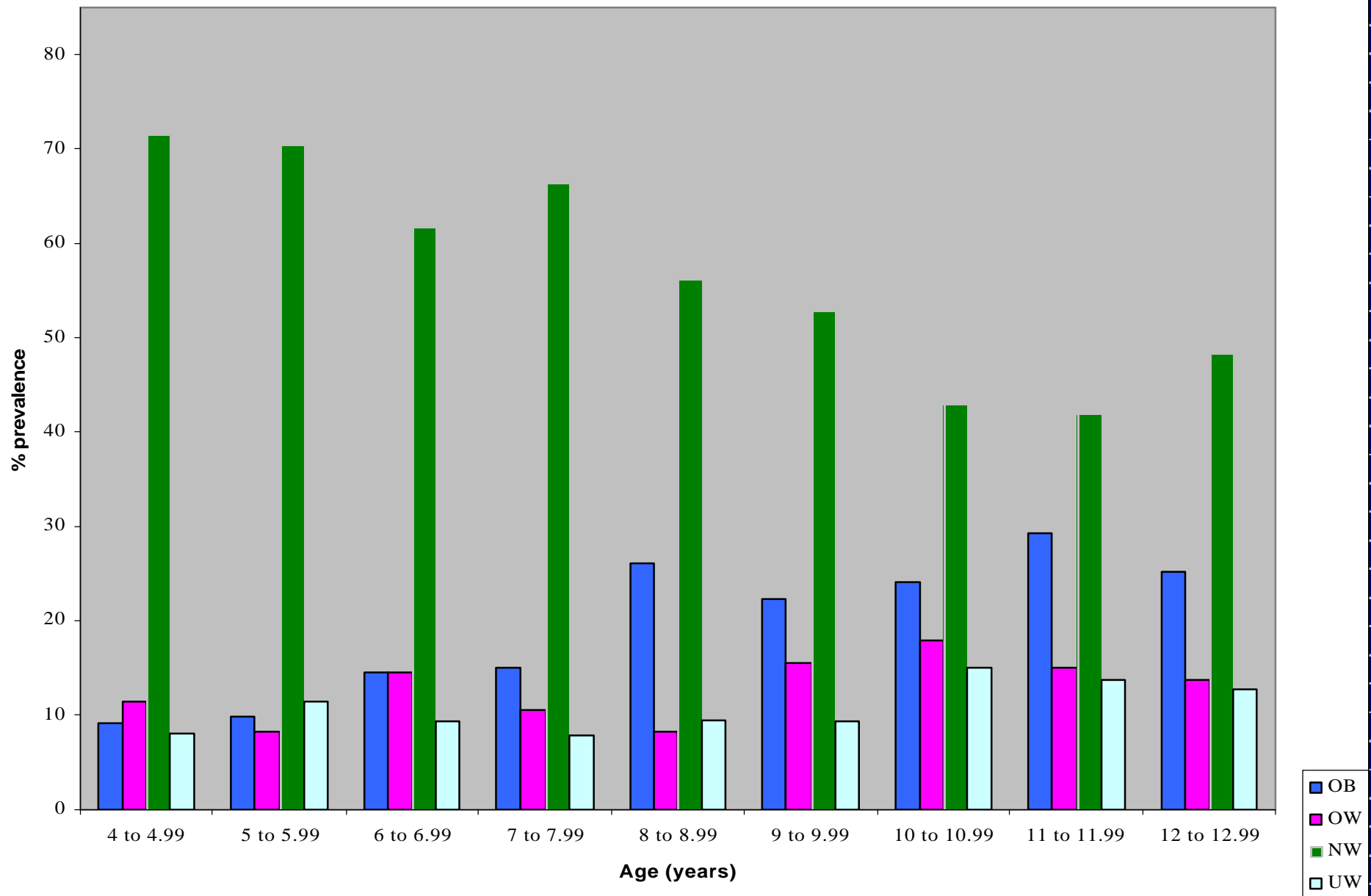
PARTICIPATION RATE

- The study achieved a participation rate of 98.7% (2994/3034)
- 40 children were excluded from the study through absenteeism, missing dates of birth and physical status.

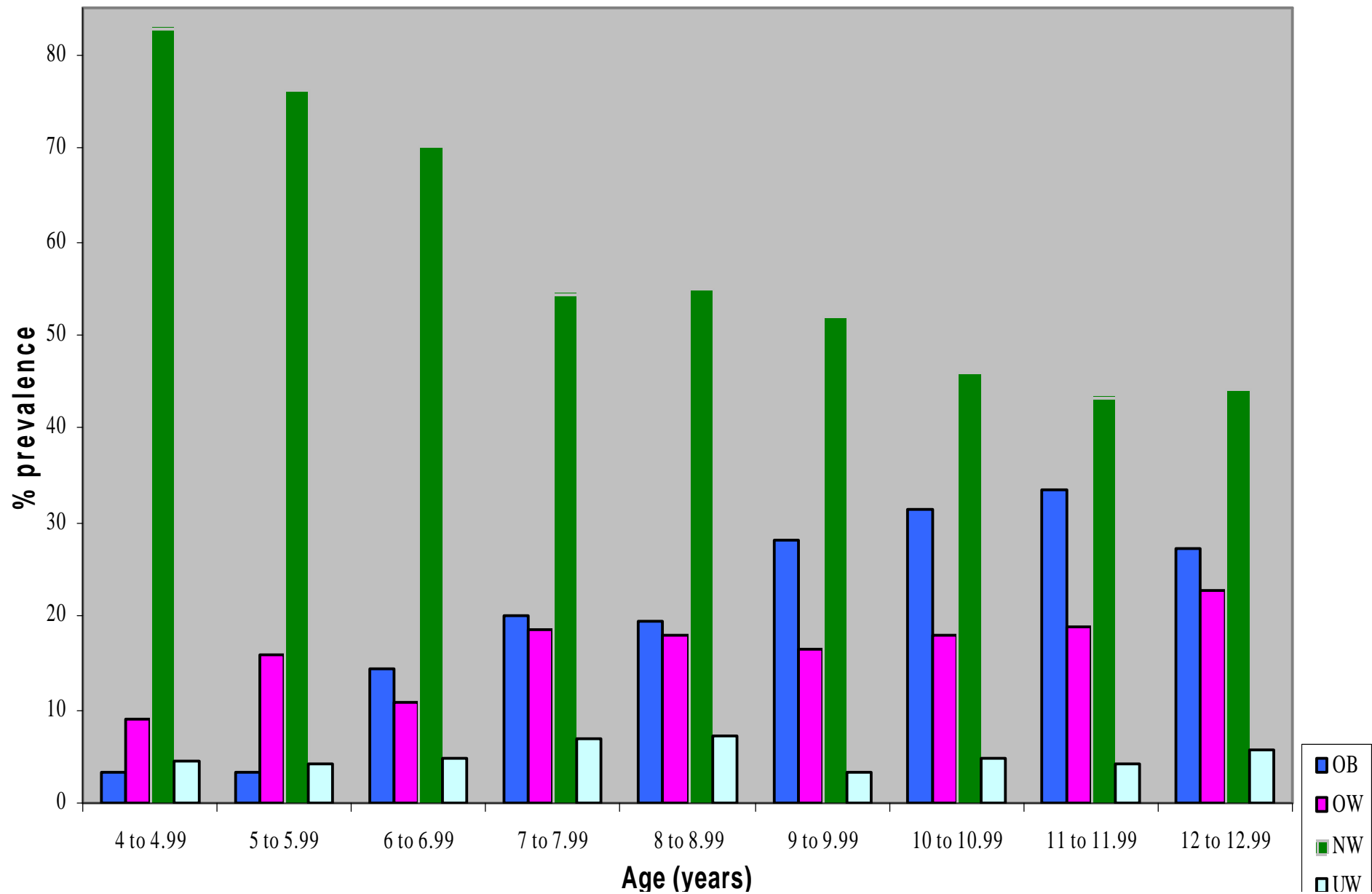
PREVALENCE OF OVERWEIGHT AND OBESITY

- 19.8% of children aged 4-12 years in Gibraltar were obese ($>120\%$ wt/ht/age).
- 14.6% of children were overweight (111-120%).
- Obesity increased with age in both sexes until 11 years of age. At 12 years, prevalence of obesity decreased in both sexes.
- Obesity was significantly greater in boys than in girls between 9 and 12 years of age ($p > 0.05$).

Prevalence of obese, overweight, normal and underweight boys



Prevalence of obese, overweight, normal weight and underweight girls



COMPARISON WITH INTERNATIONAL DATA

- Few studies available for comparison.
- The lack of definite criteria for defining obesity in children poses the most significant problem when comparing data from different countries.
- Different sample sizes and age ranges also limit comparisons that can be made.

Comparison with North East Italy (Maffeis et al., 1993)

	(>120% wt/ht/age)		(>120% wt/ht/age)	
	GB %	n	Italy %	n
Boys (years)				
4	3.4	555	3.6	749
8	19.6		11.2	
10	31.4		23.4	
12+/-0.5	27.3		17.3	
Girls (years)				
4	9.1	526	2.0	774
8	26.0		13.3	
10	24.1		12.7	
12+/-0.5	25.3		11.9	

Comparison with United States - NHANES III (1988-1994) Troiano et al., 1998; Ogden et al., 1997

	(>120% wt/ht/age)		(>95th perc.)	
	GIB (%)	n	NHANES III (%)	n
Both sexes				
4-5 years	6.7	577	7.9	-
Boys				
4-5 years	3.4	296	5.0	-
Girls				
4-5 years	9.5	281	10.8	-
Both sexes				
6-11 years	23.6	2234	10.6	3279
Boys				
6-8 years	17.9	619	9.9	817
9-11 years	31.0	537	12.6	856
Girls				
6-8 years	18.5	563	9.5	793
9-11 years	25.3	515	10.4	813

Comparison with United Kingdom 1995-1997 (Health of Young People '95-'97)

	($\geq 120\%$ wt/ht/age)		(≥ 98 th percentile)	
	GB%	n	UK%	n
Grls				
2-15 years	19.5 (4-12 years)	1454	7.0	
Boys				
2-15 years	20.1 (4-12 years)	1540	6.6	

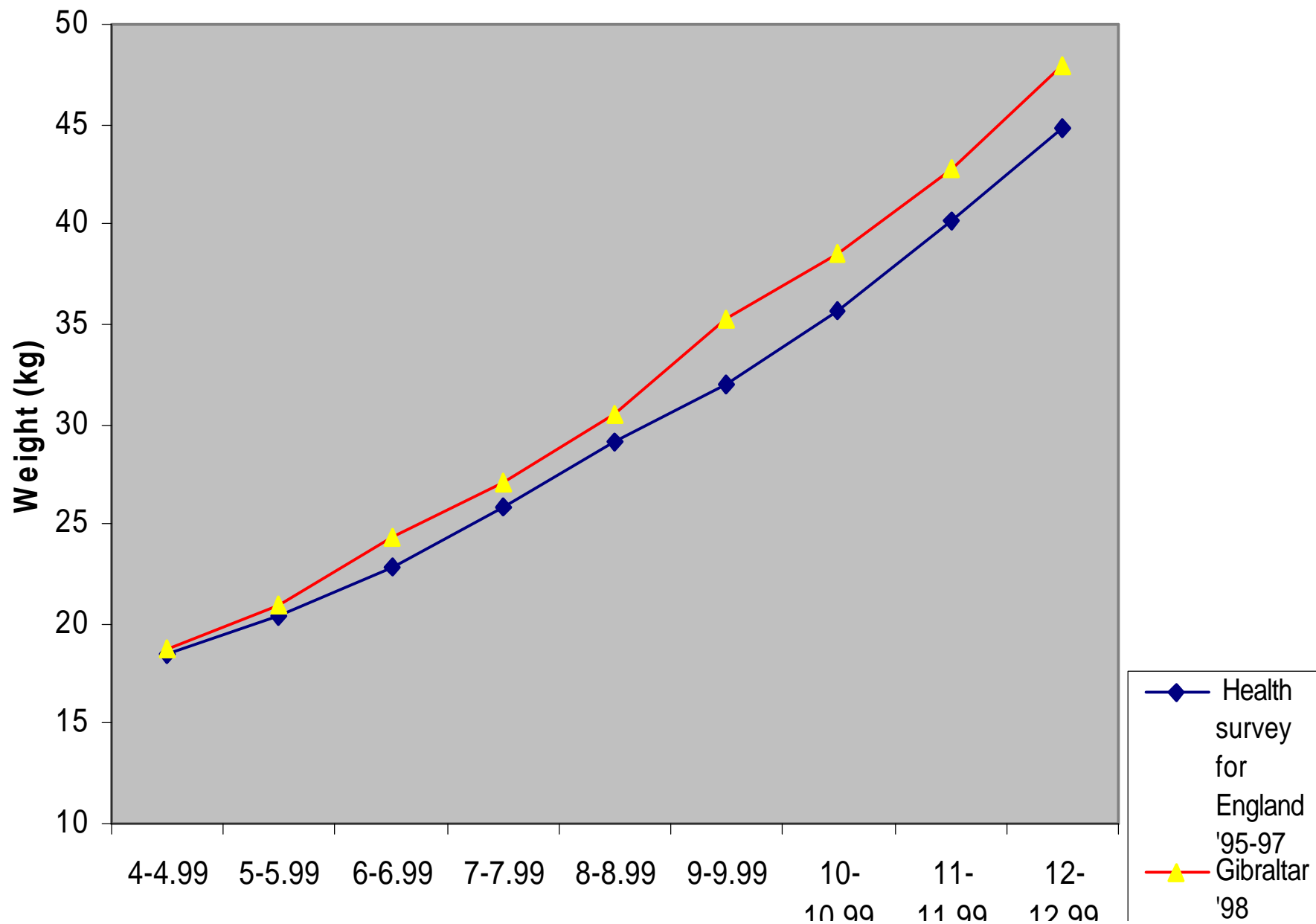
Comparison with Pueblo Indian Americans - New Mexico 1988-1993 (Story et al., 1999)

	<i>(111 - >120% wt/ht/age)</i>		<i>(overweight or obese)</i>	
	GIB (%)	n	Pueblo Indian (%)	n
Girls and boys	22.5	1235	40.4	773
9-13 years		(9-12 years)		

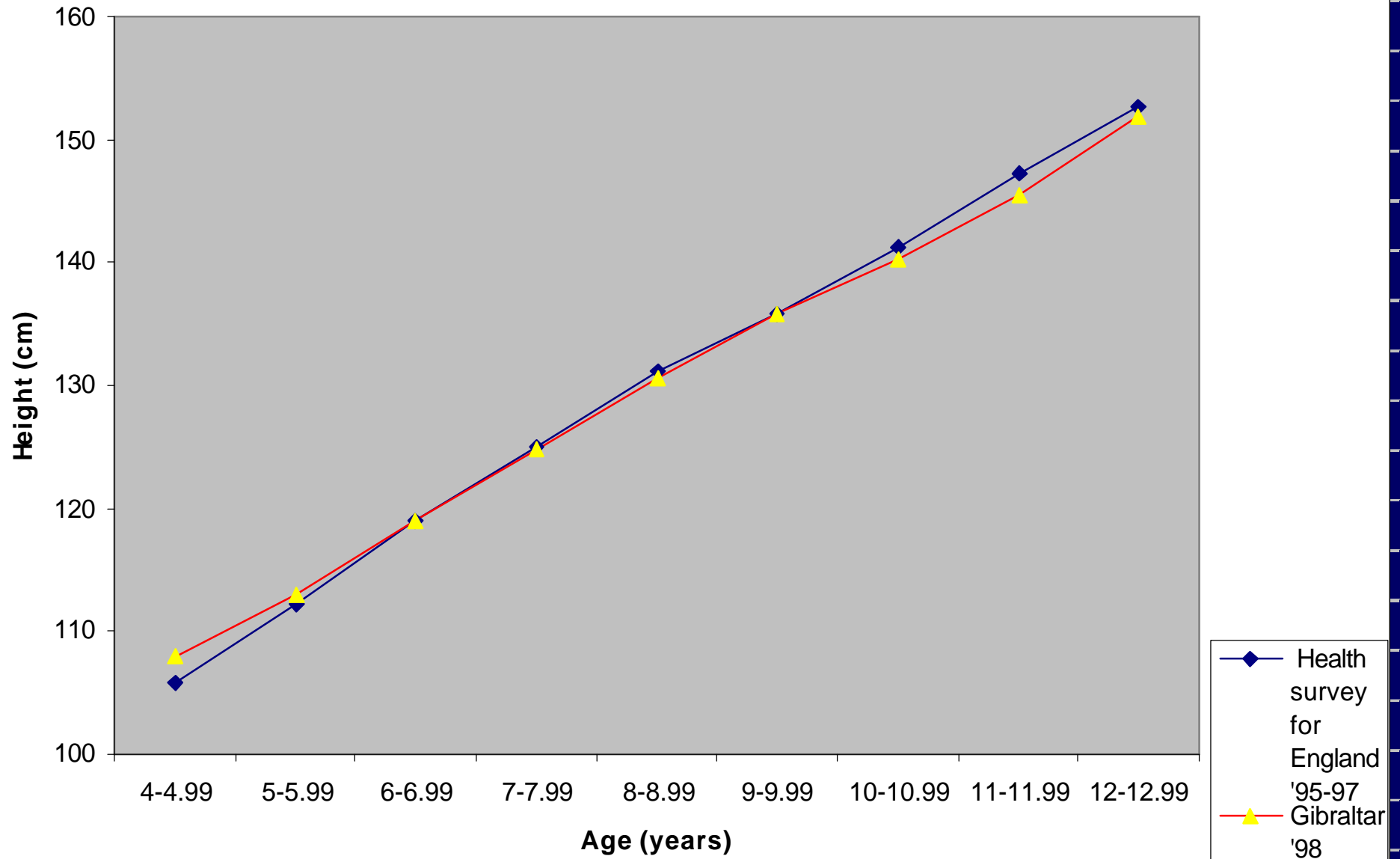
Comparison with Navajo Indian Americans - New Mexico 1988-1993 (Story et al., 1999)

	<i>(111 - >120% wt/ht/age)</i>		<i>(Overweight or obese)</i>	
	GIB (%)	n	Navajo Indian (%)	n
Girls and boys	22.5	1235	29.1	770
9-13 years		(9-12 years)		

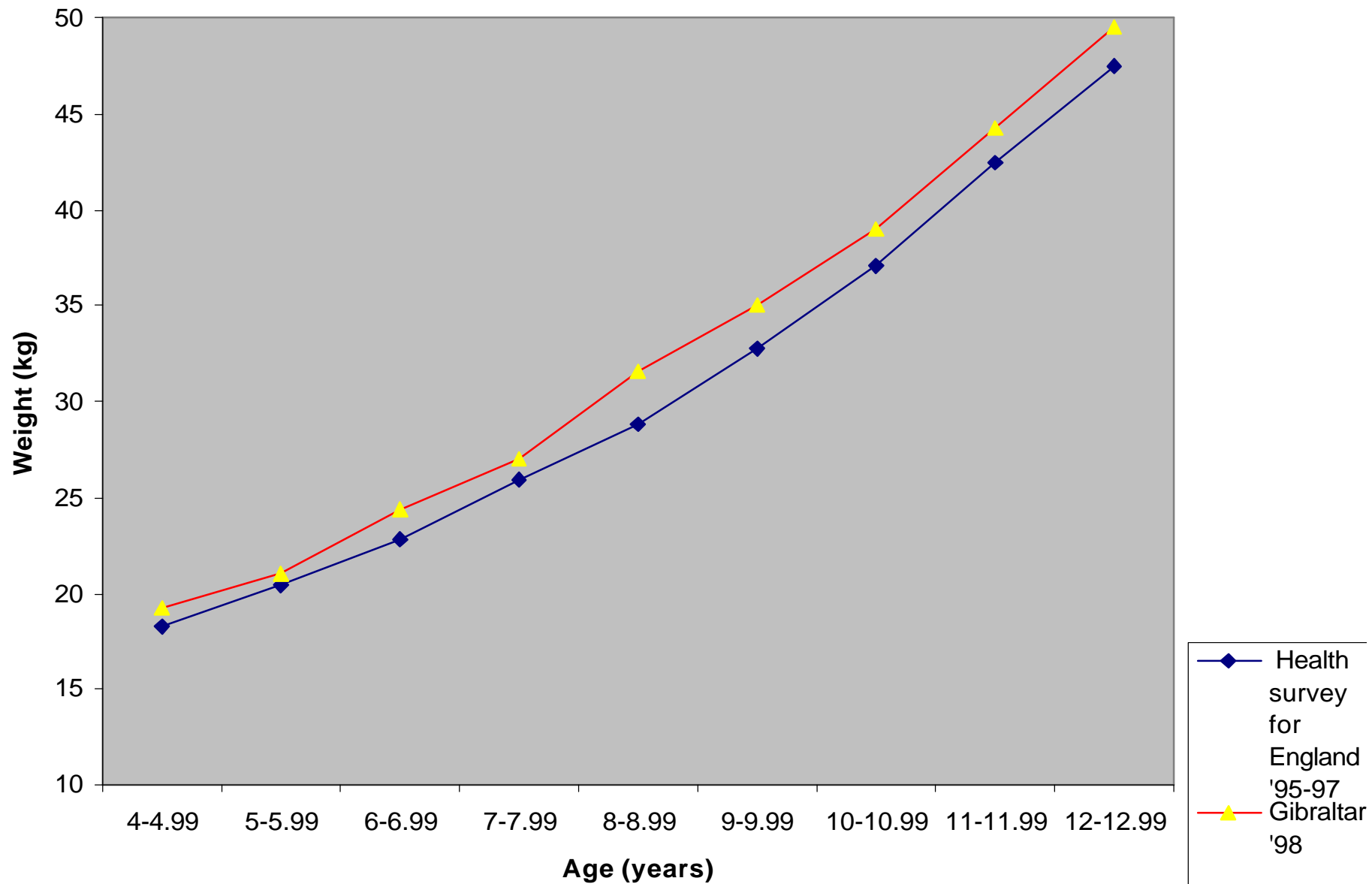
Boys mean weight



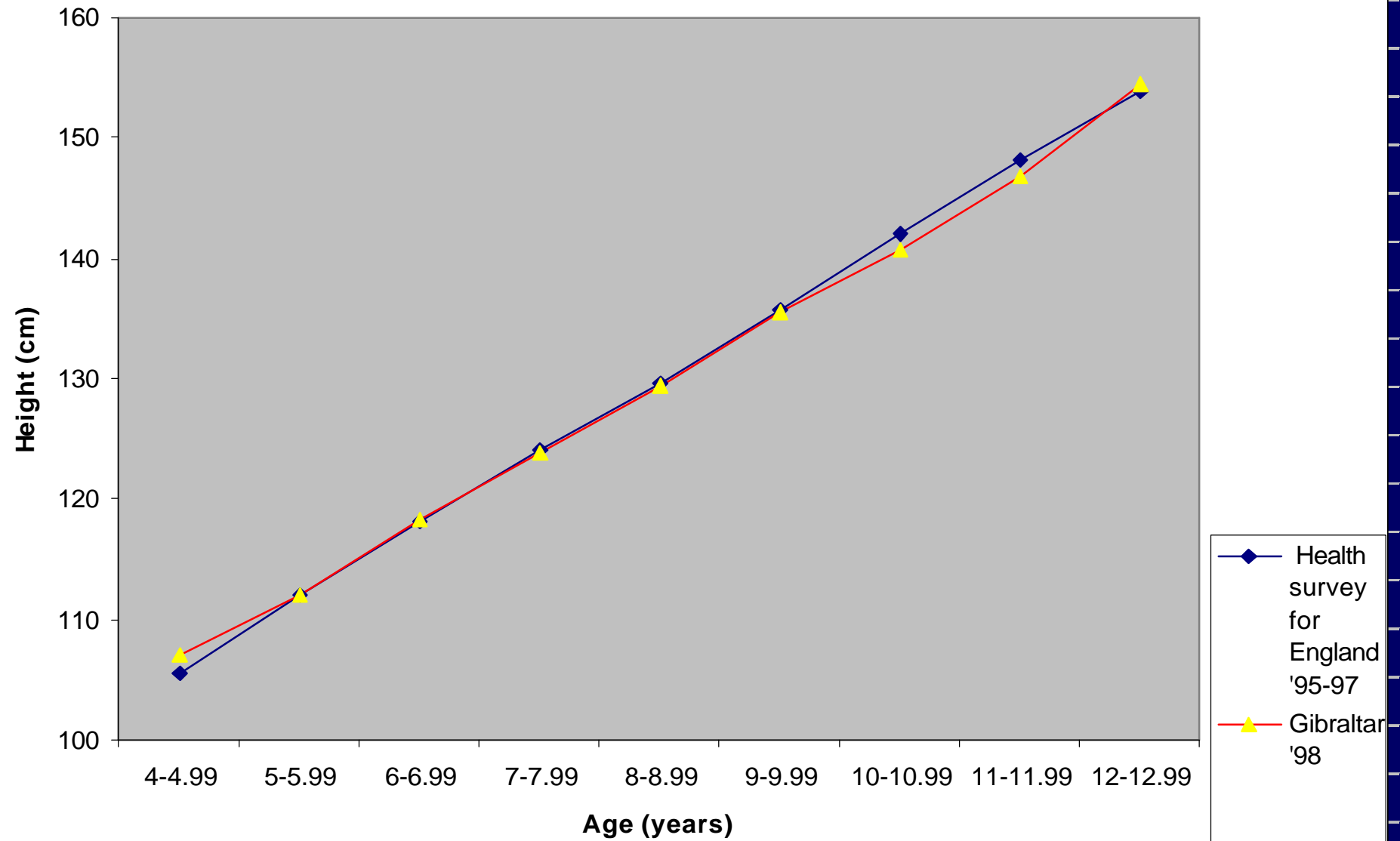
Boys mean height



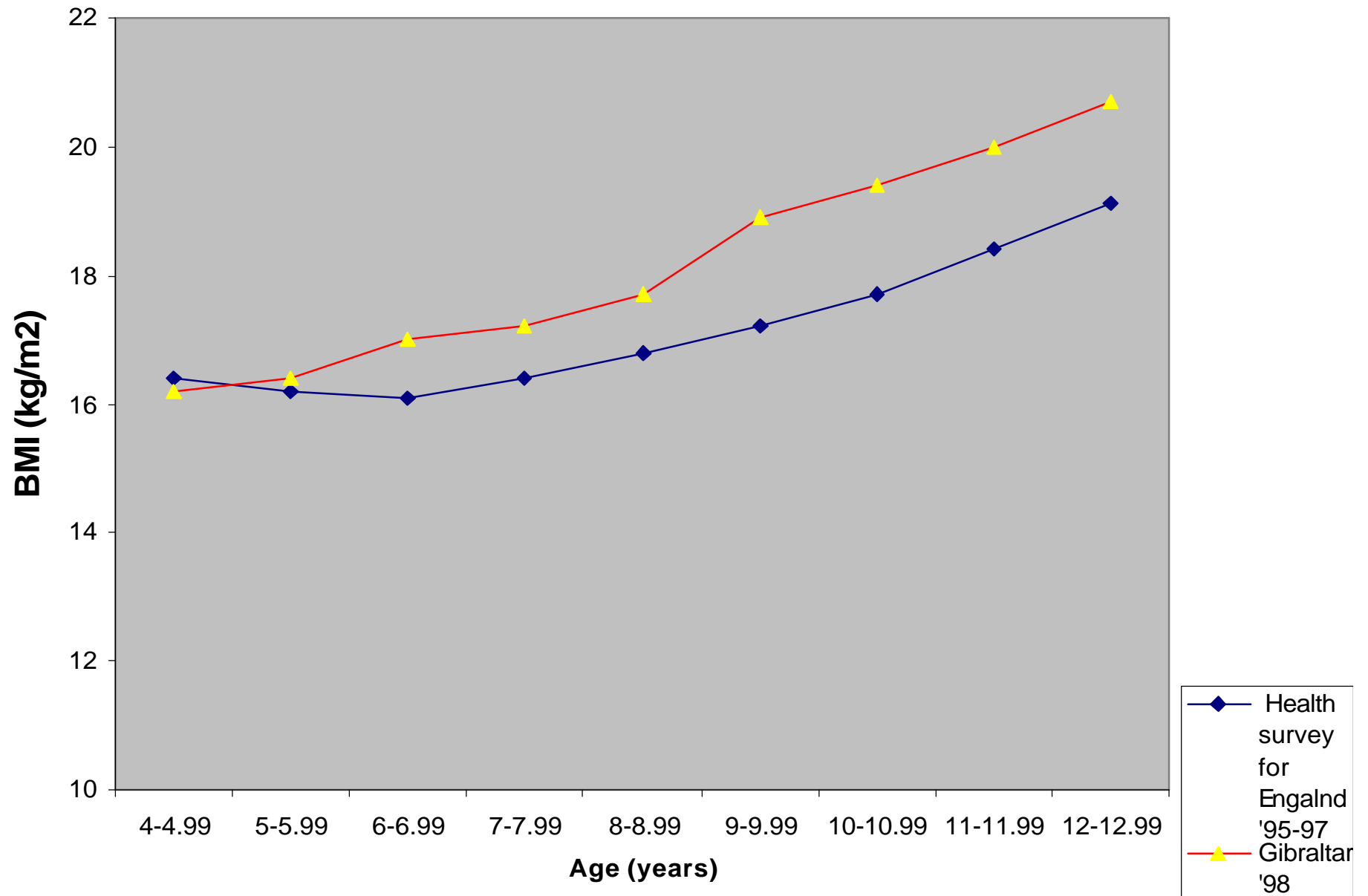
Girls mean weight



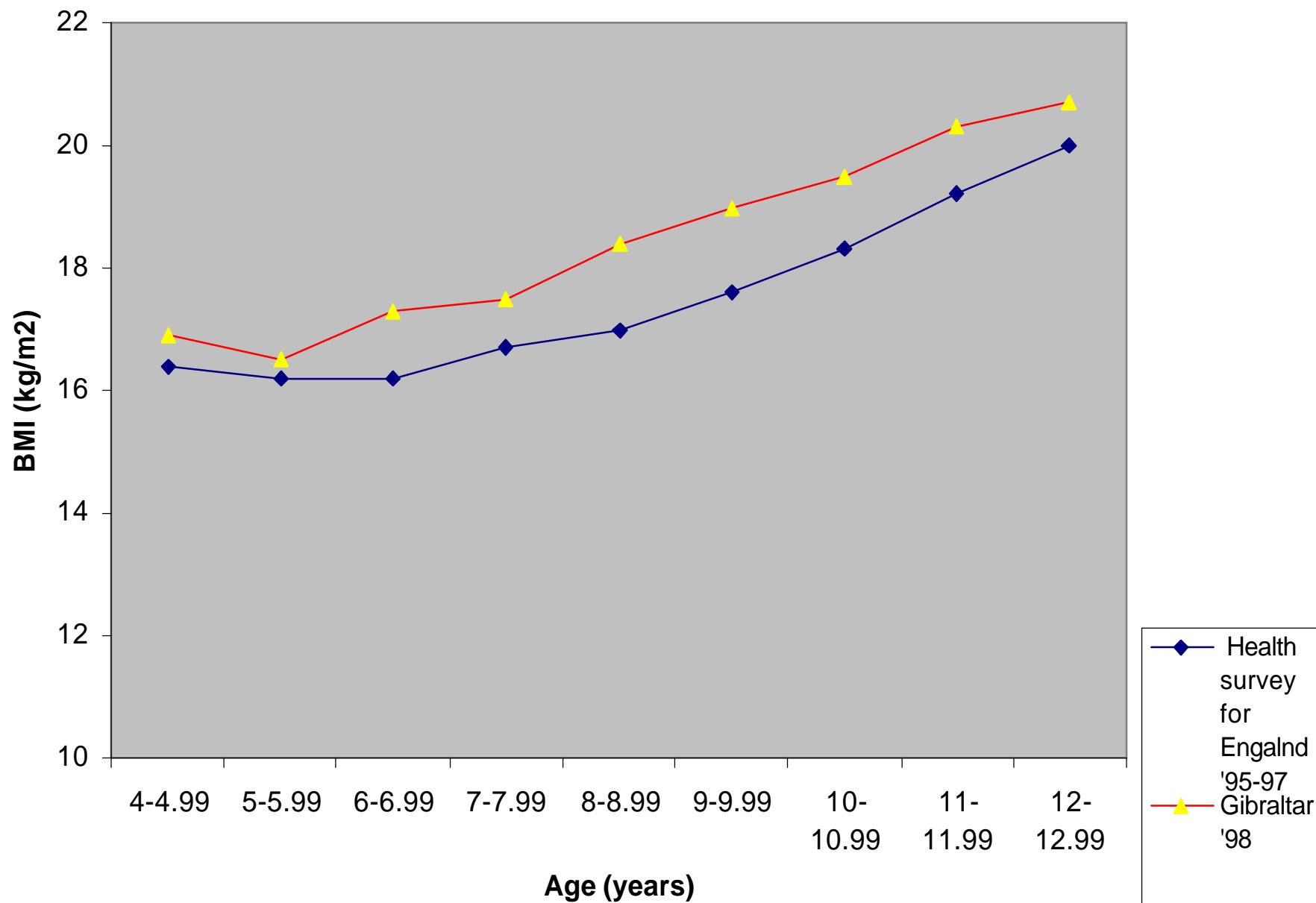
Girls mean height



Boys mean BMI



Girls mean BMI



UNANSWERED QUESTIONS

- Is the prevalence of childhood obesity in Gibraltar increasing or decreasing?
- What are the causes of childhood obesity in Gibraltar?
- What about the 'Mediterranean diet'?

CONCLUSIONS

- The numerous health consequences of obesity and the persistence of obesity into adulthood are extensively documented.
- This will place a heavy financial burden on the Gibraltar Government and more specifically the GHA in the future.
- Dietetic workload as well as health education workload in schools and the GHA will increase.

