Case Study Two

Investigating the Relationship between Changes in Weight Loss and Triglyceride Level

Triglycerides - What are they?

Triglycerides are lipids (fats) that are formed from glycerol and fatty acids. They can be absorbed into the body from food intake, particularly from fatty food, or produced in the body itself when the uptake of energy (food) exceeds the expenditure (exercise). Triglycerides provide the principal energy store for our body. Compared to carbohydrates or proteins, triglycerides produce a substantially higher number of calories per gram.

Epidemiological studies have demonstrated that there is a relationship between raised blood levels of triglyceride and coronary heart disease, but it is not certain how important a risk factor triglycerides are. It is believed that exercise and lower consumption of fatty acids can help to reduce triglyceride levels.

The Study

This study is concerned with a sample of 35 obese patients who followed a treatment regime comprising a combination of diet, exercise and drug treatment. At the start of the study each patient's weight and triglyceride level were recorded. Eight weeks later, weight and triglyceride level were again determined. The key question of interest is whether or not there appears to be a relationship between weight loss and change in triglyceride level. The study results are shown overleaf in Table 1.

Questions of Interest

i. What are the characteristics of the patients involved?

ii. Does there appear to be a relationship between change in triglyceride level and change in weight?

iii. Is it possible to obtain a simple formula for predicting change in triglyceride level from change in weight?

iv. What change in triglyceride level should be predicted for a patient who loses 5 kg over an eight week period?

v. Is it sensible to use a straight line to make a prediction of change in triglyceride level for a patient who loses 10 kg in weight?

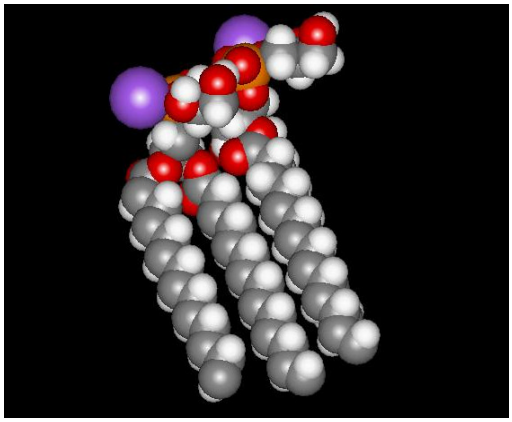

Table 1

Data for the Study to Investigate the Relationship between Weight Loss and Change in Triglyceride Level

Patient ID	Weight at Baseline (kg)	Weight at Week 8 (kg)	Triglyceride Level at Baseline (mg/dl)	Triglyceride Level at Week 8 (mg/dl)
201	84.0	82.4	90	131
202	88.8	87.0	137	82
203	87.0	81.8	182	152
204	84.5	80.4	72	72
205	69.4	69.0	143	126
206	104.7	102.0	96	157
207	90.0	87.6	115	88
208	89.4	86.8	124	123
209	95.2	92.8	188	255
210	108.1	100.9	167	87
211	93.9	90.2	143	213
212	83.4	75.0	143	102
213	104.4	102.9	276	313
214	103.7	95.7	84	84
215	99.2	99.2	142	135
216	95.6	88.5	64	114
217	126.0	123.2	226	152
218	103.7	95.5	199	120
219	133.1	130.8	212	156
220	85.0	80.0	268	250
221	83.8	77.9	111	107
222	104.5	98.3	132	117
223	76.8	73.2	165	96
224	90.5	88.9	57	63
225	106.9	103.7	163	131
226	81.5	78.9	111	54
227	96.5	94.9	300	241
228	103.0	97.2	192	124
229	127.5	124.7	176	215
230	103.2	102.0	146	138
231	113.5	115.0	446	795
232	107.0	99.2	232	63
233	106.0	103.5	255	204
234	114.9	105.3	187	144
235	103.4	96.0	154	96