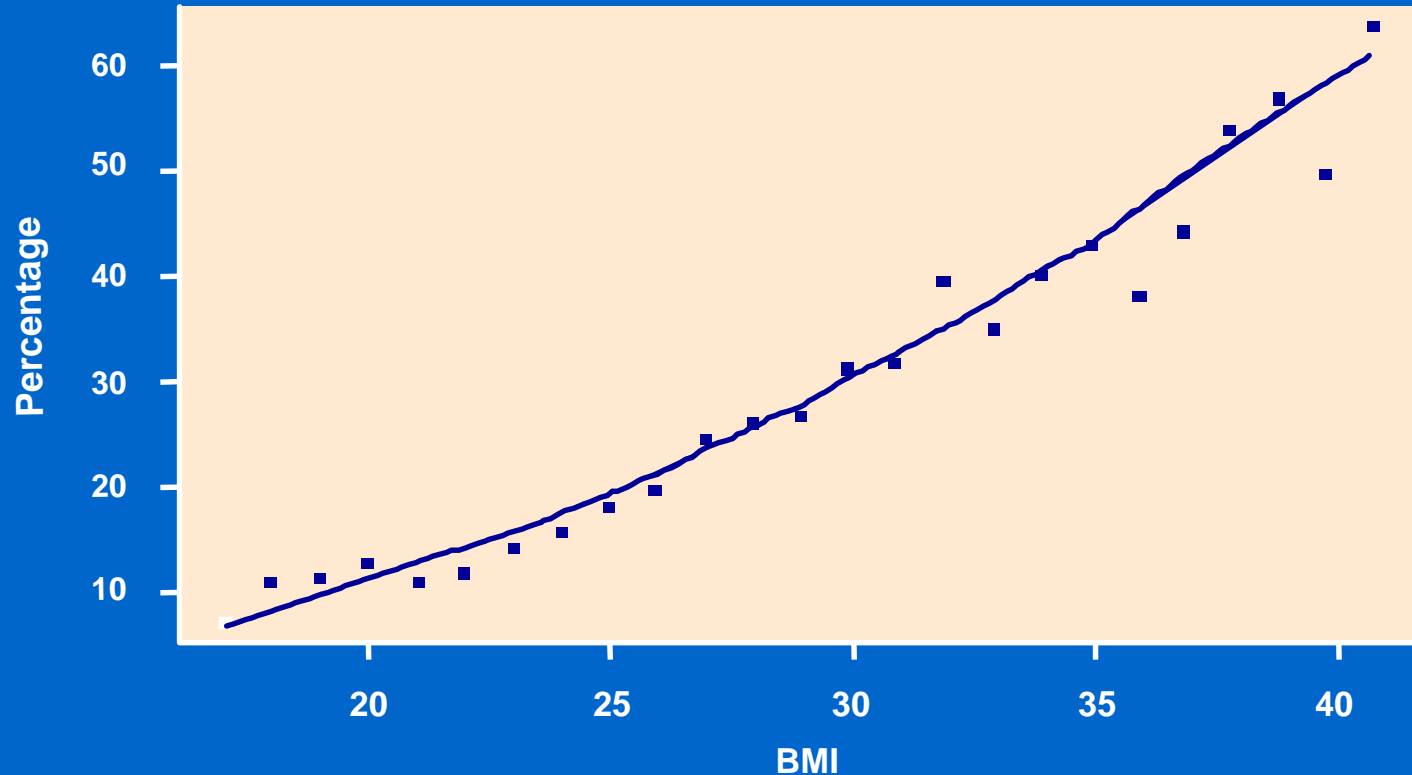
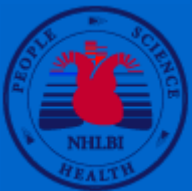


# Hypertension



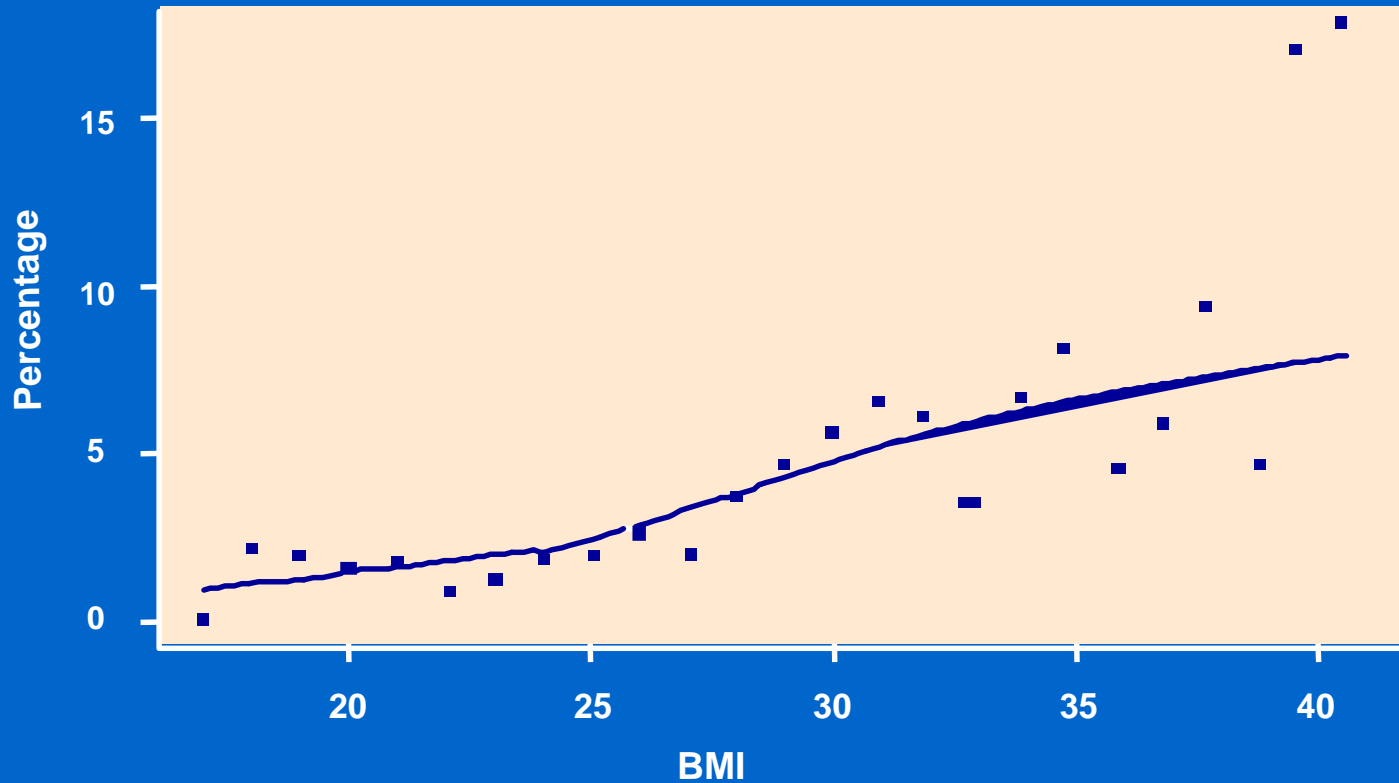
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



Brown WJ et al. *Int J Obes* 1998;22:520-528.



# Diabetes



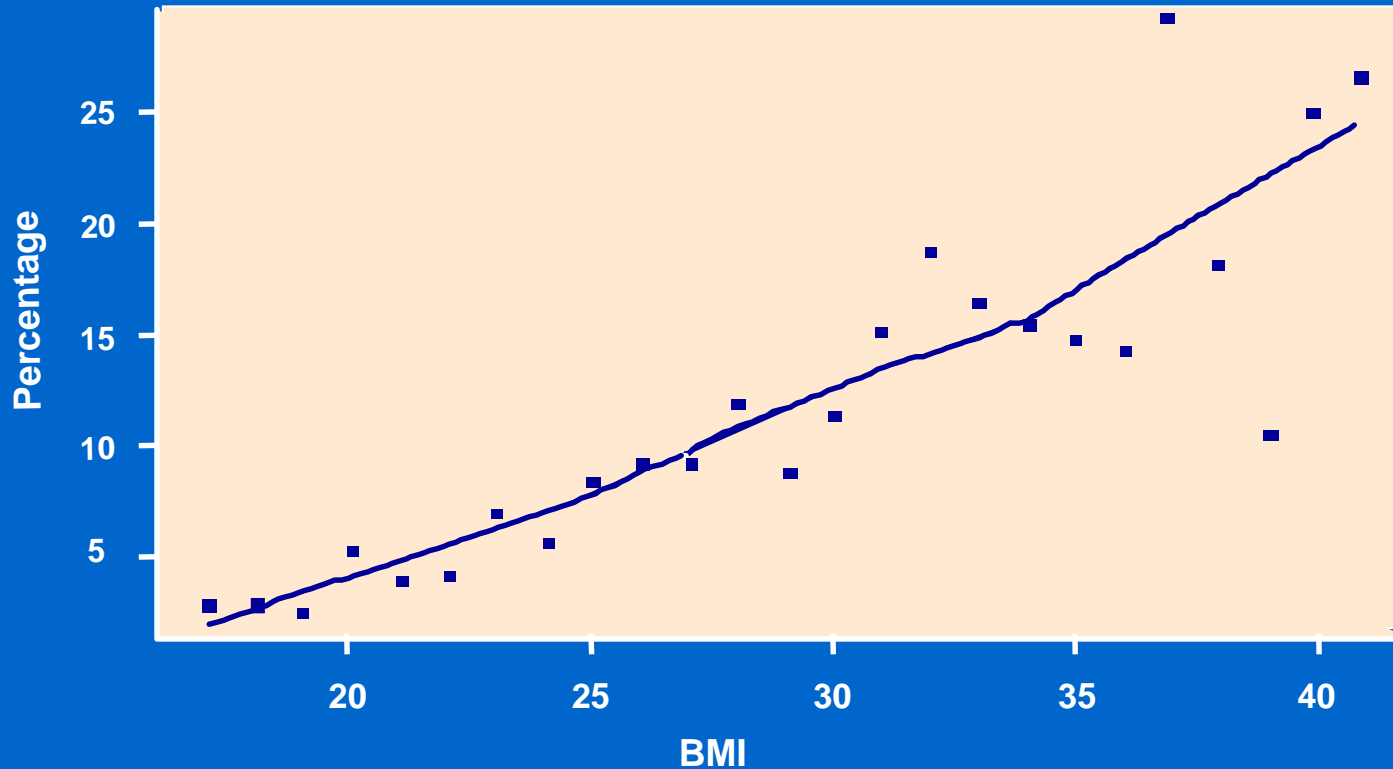
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



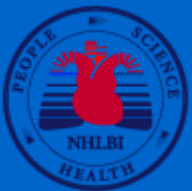
Brown WJ et al. *Int J Obes* 1998;22:520-528.



# Cholecystectomy



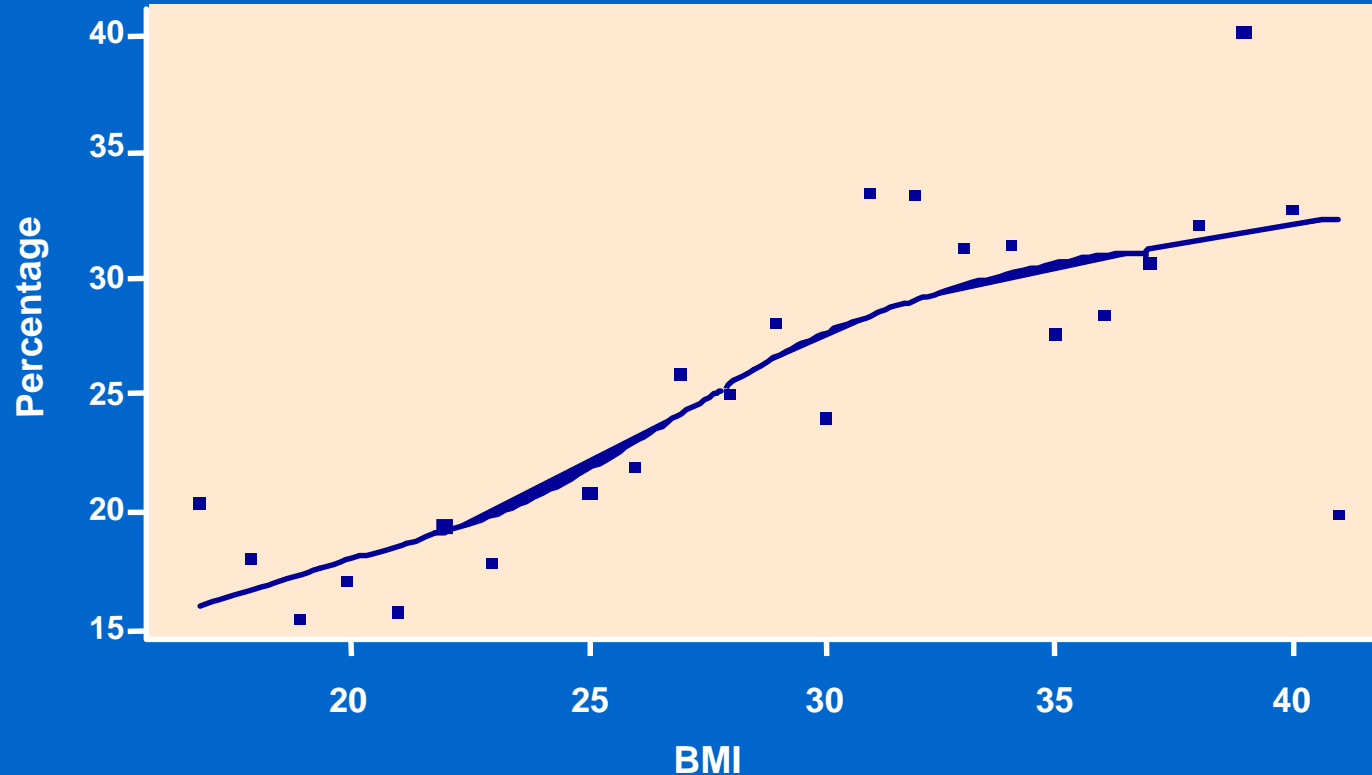
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



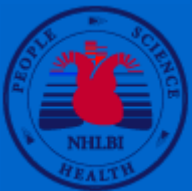
Brown WJ et al. *Int J Obes* 1998;22:520-528.



# Hysterectomy



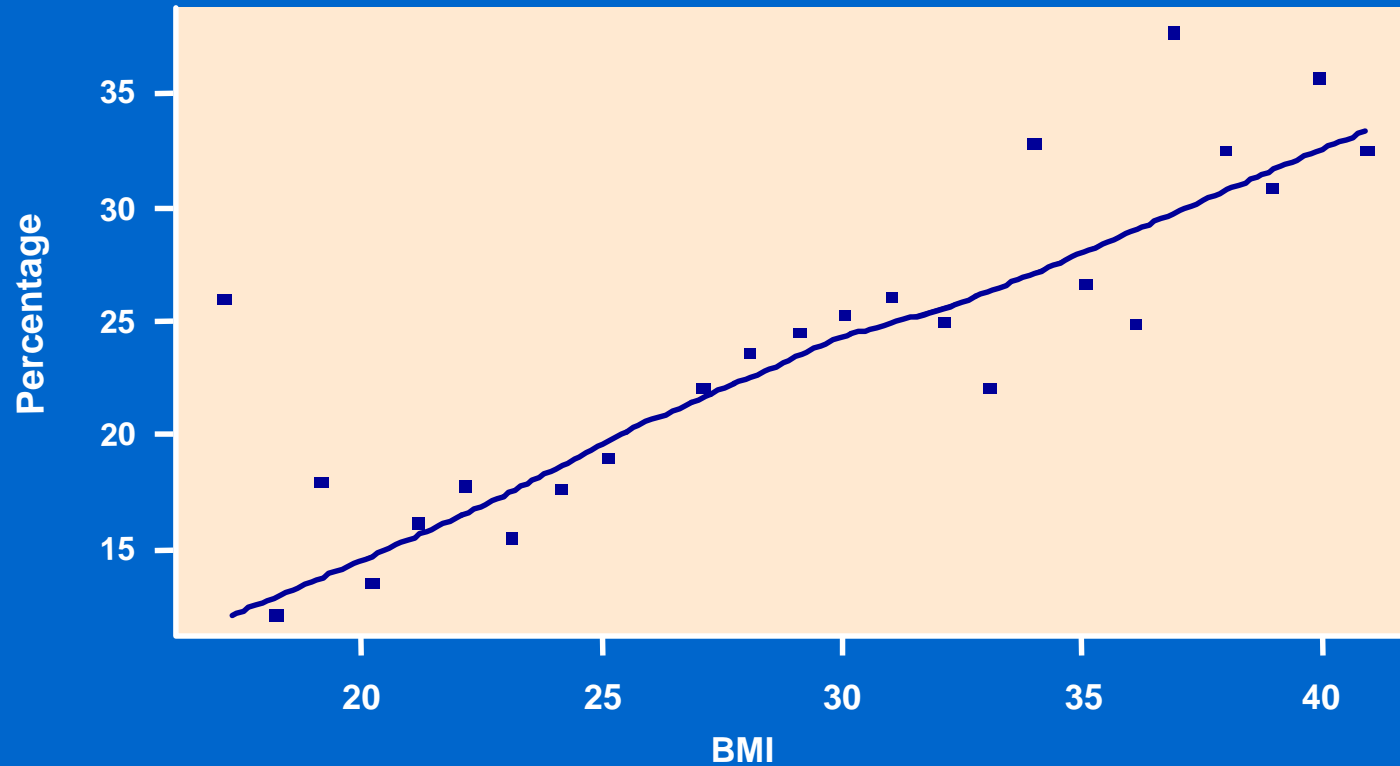
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



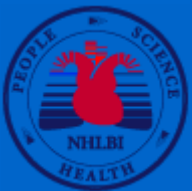
Brown WJ et al. *Int J Obes* 1998;22:520-528.



# Back Pain



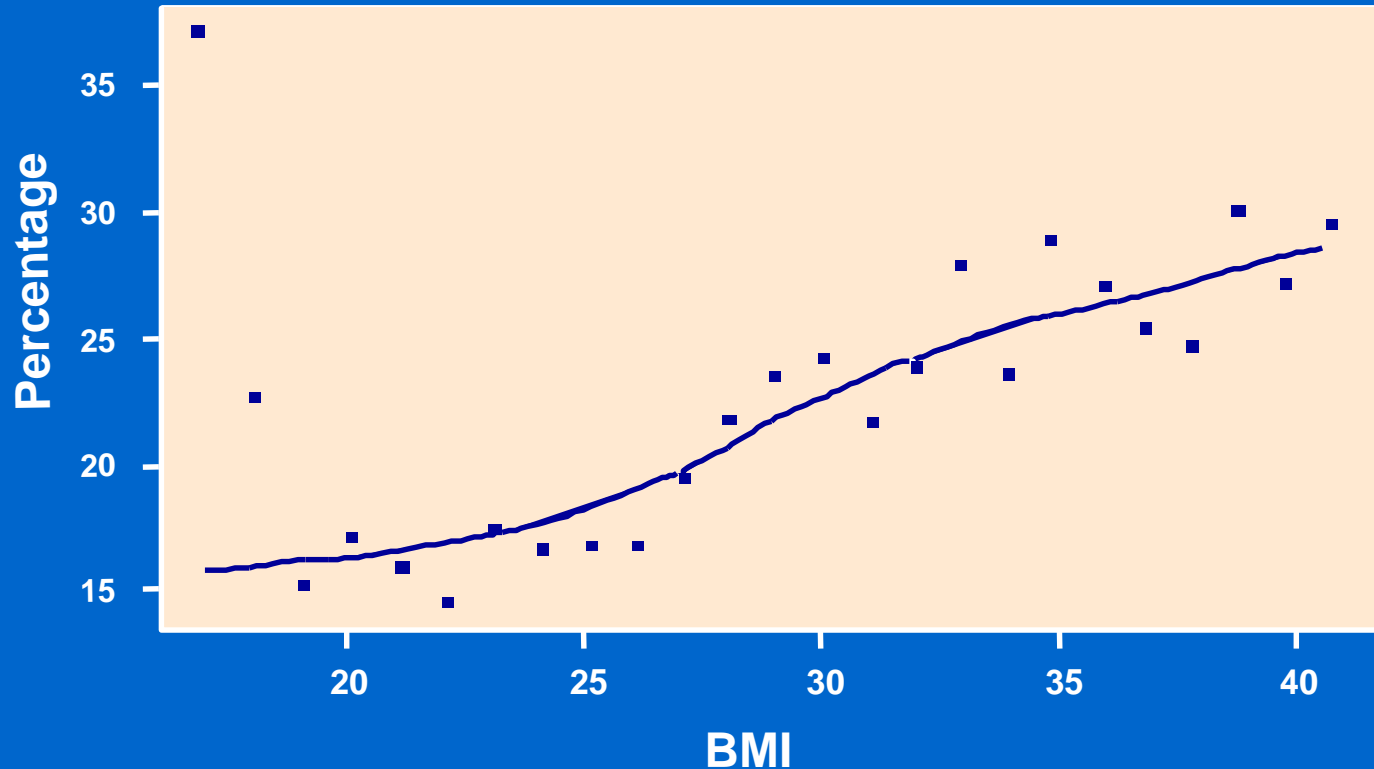
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



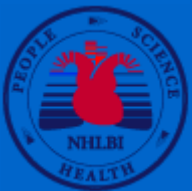
Brown WJ et al. *Int J Obes* 1998;22:520-528.



# Constant Tiredness



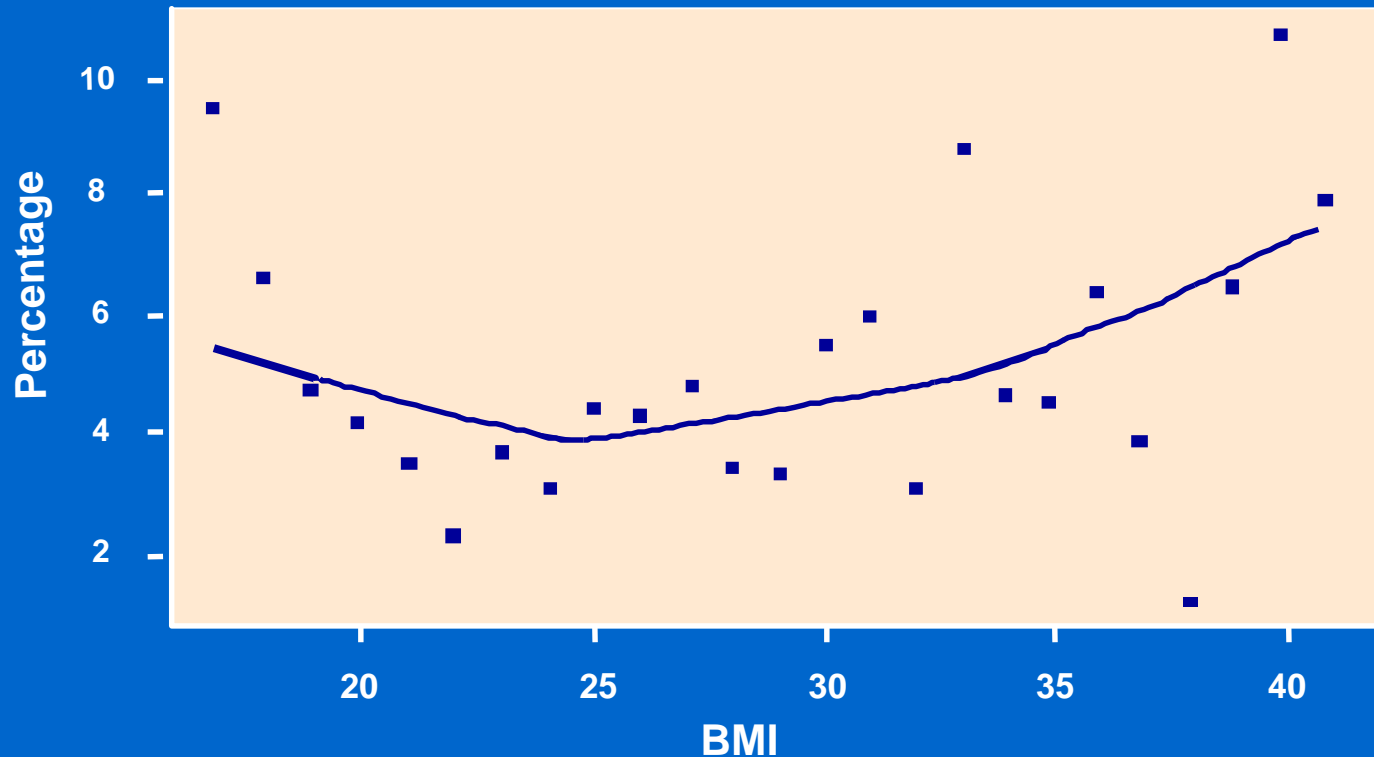
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



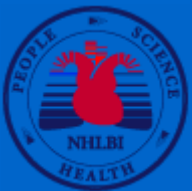
Brown WJ et al. *Int J Obes* 1998;22:520-528.



# More Than Three Specialist Consultations



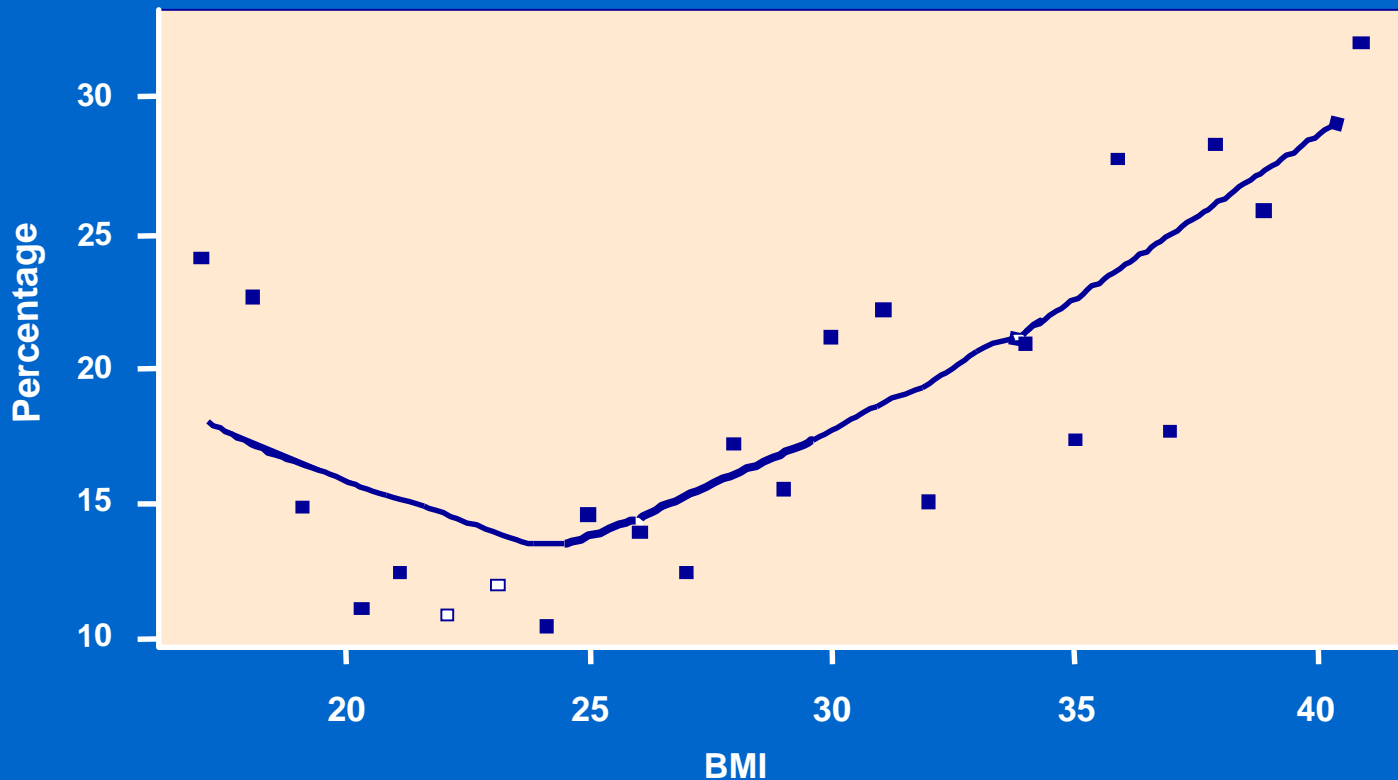
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



Brown WJ et al. *Int J Obes* 1998;22:520-528.



# More Than Five GP Consultations



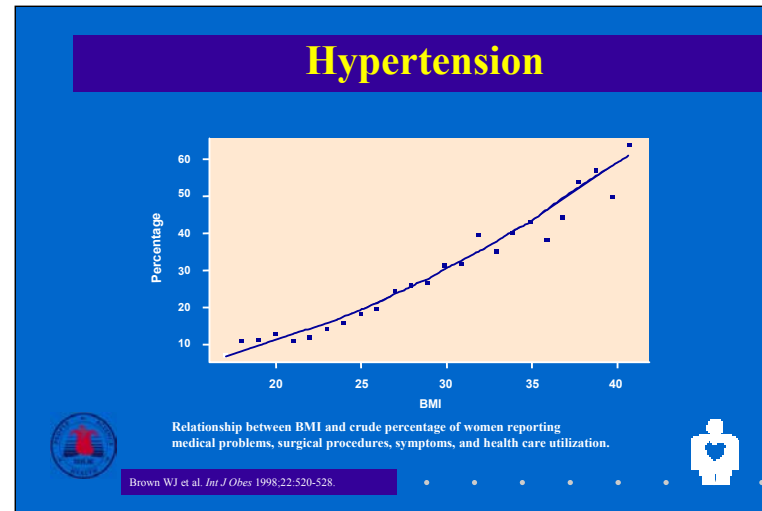
Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.



Brown WJ et al. Int J Obes 1998;22:520-528.

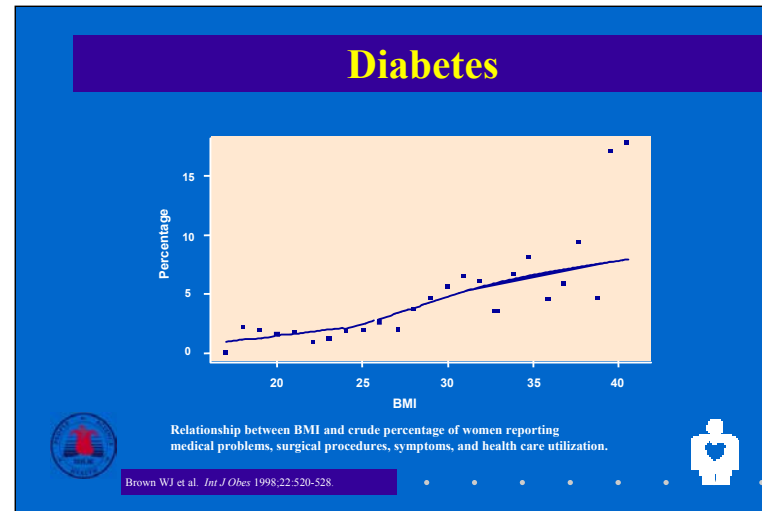






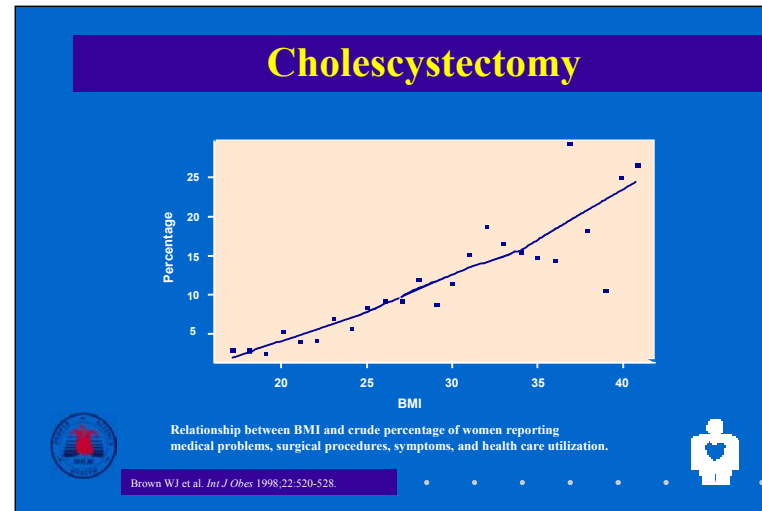
Data in the next 8 slides show results of a population-based longitudinal study by Brown and colleagues. The Australian Longitudinal Study on Women's Health enrolled 13,431 women who participated in a baseline survey of selected indicators of health and well-being for middle-aged women, age 45-49. The study explored the associations between body mass index and selected indicators of health and well-being; surgical procedures(cholecystectomy, hysterectomy), symptoms like back pain, and number of visits to general practitioners or specialists. BMI was calculated using self-reported height and weight, corrected following the method of Waters. Hypertension shows a strong monotonic relationship with BMI.

- Trend curve estimates the relationship between BMI and hypertension. The percentage of reported hypertension increases with increasing body mass index.
- The prevalence of hypertension at different levels of BMI were 10.6%(BMI <20), 13.3% (BMI $\geq$ 20 $\leq$ 25), 22.8%(BMI $\geq$ 30 $\leq$ 40), and 61.3%(BMI>40).
- There was a 6-fold increase in the odds ratio of hypertension between women with BMI<20 and women with BMI >40.



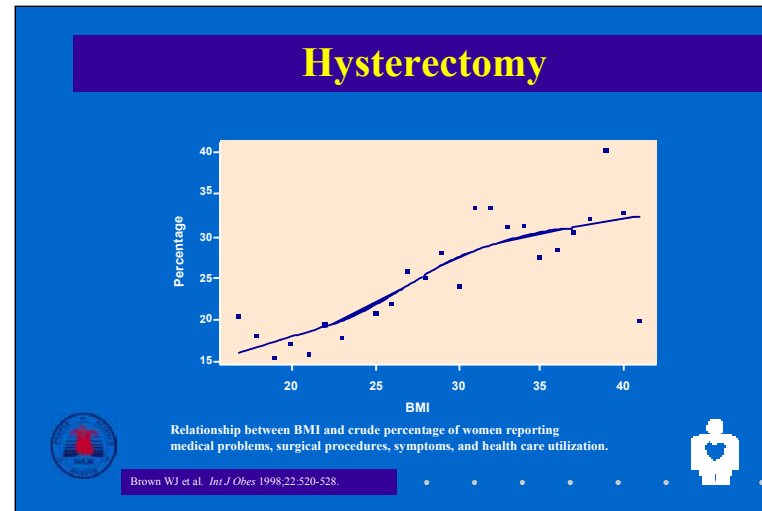
Diabetes, as described in the study by Brown and colleagues of Australian women , shows a monotonic relationship with BMI.

- The prevalence of diabetes increases 6-fold between women with a BMI < 20 and women with a BMI > 40.
- Most of the increase in diabetes prevalence occurs in women with BMI >30. Prevalence is 1.6% at BMI < 20, 1.4% at BMI  $\geq 20$ -<25, 3.2% at BMI > 25-<30, 5.9% at BMI > 30-<40, and 19.3% at BMI > 40.
- There is a 16-fold increase in the odds ratio for diabetes between women with BMI < 20 and women with BMI > 40.



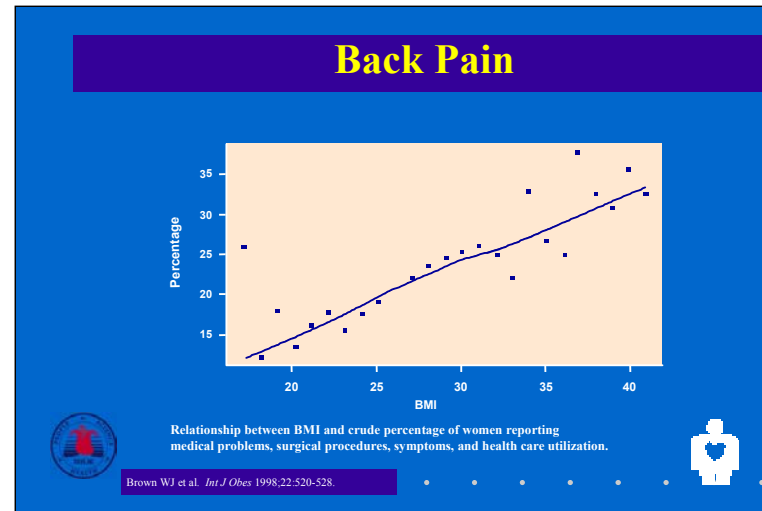
In the study by Brown and colleagues, the relationship between BMI and cholecystectomy also shows an upward trend with increasing BMI.

- A linear increase of increasing surgical procedures is seen for cholecystectomy as BMI increases.
- There is a 7-fold increase in the odds ratio of cholecystectomy in women with a BMI of < 20 compared to women with a BMI of > 40.



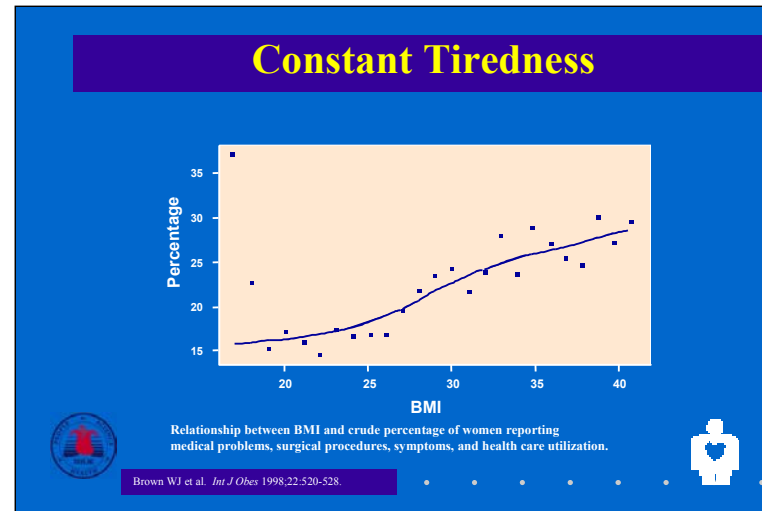
This trend curve shows the relationship between BMI and hysterectomy in Australian women in the study by Brown and colleagues. However, the greatest prevalence of hysterectomy occurs in women with BMI  $\geq 30$  and  $\leq 40$ .

- The general trend continues to show women with the lowest BMI having this surgical procedure less often than those with a higher BMI.
- There is a higher risk of surgical procedures in obese women, which may account for the lower prevalence in women with BMI  $> 40$ .



Back pain is described in the study by Brown and colleagues as increasing with higher BMI. This trend curve shows the relationship between BMI and back pain.

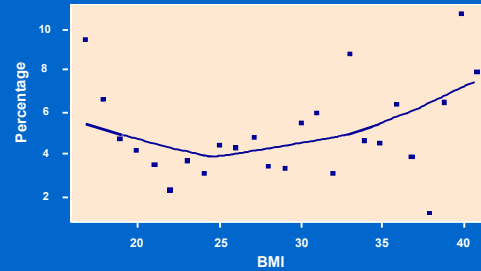
- There is a 40% increase in the odds ratio of back pain between women with BMI < 20 and women with BMI > 40.
- Back pain is one of the most common symptoms reported by women in studies of health concerns.



The percentage of women reporting constant tiredness in the study by Brown and colleagues increases with increasing body mass index. This graph shows the trend curve estimated to show the relationship between BMI and constant tiredness.

- There is a J-curve associated with tiredness. Women with BMI < 20 report higher feelings of tiredness than those with BMI between 20 and 30, and are almost equivalent to those with BMI between 30 and 40.
- There is a 70% increase in odds ratio between women with BMI < 20 and those with BMI > 40.

## More Than Three Specialist Consultations

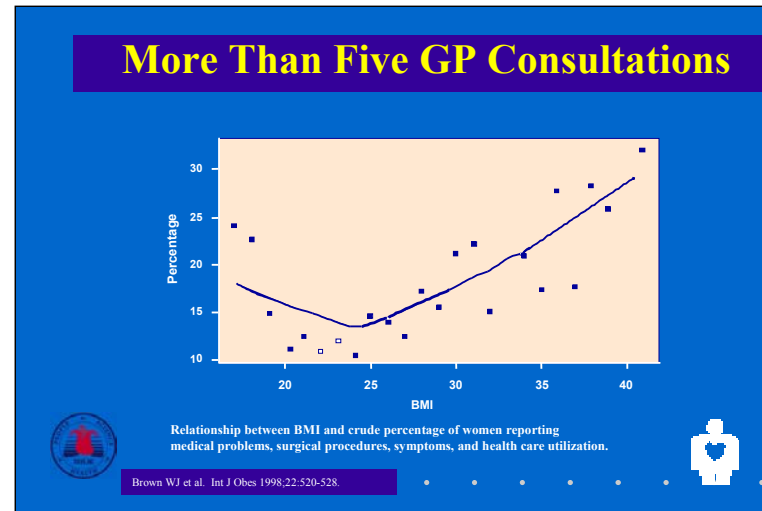


Relationship between BMI and crude percentage of women reporting medical problems, surgical procedures, symptoms, and health care utilization.

Brown WJ et al. *Int J Obes* 1998;22:520-528.

Brown and colleagues found that consultations with general practitioners and visits to specialists increased with increasing BMI among women. The next two slides show this relationship.

- Among women there is a trend curve estimated to show the relationship between BMI and specialist consultations.
- The percentage of reported specialist consultations showed a J-curve relationship with BMI.
- The lowest utilization of specialists occurred with a BMI of 24 to 25.



Brown and colleagues reviewed utilization of general practitioners by women and found a J-curve trend with increasing BMI.

- Low BMI was associated with fewer physical health problems than mid-level or higher BMI.
- Indicators of health care use showed a J-shaped relationship with BMI for general practitioners.
- Prevalence of medical problems (for example, hypertension and diabetes), surgical procedures (cholecystectomy, hysterectomy) and symptoms (for example, back pain) increased monotonically with BMI.
- This study provides strong support for the recommended BMI range of 20-25 was an appropriate target for the promotion of healthy weight in middle-aged Australian women.