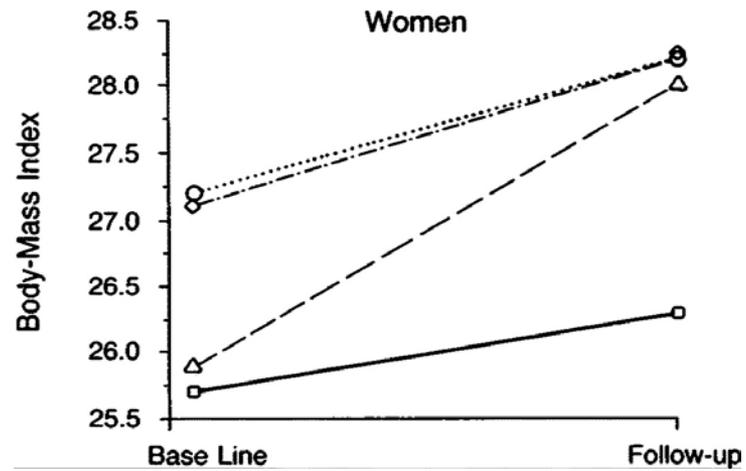
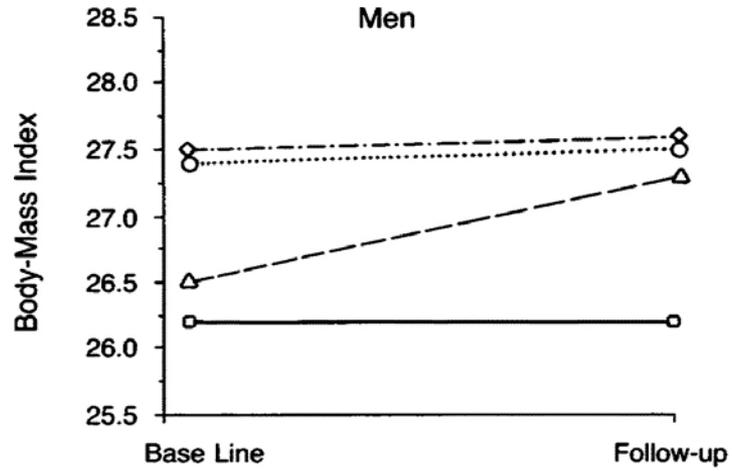


Weight Gain After Smoking Cessation

Renee Bittoun

Weight Gained

- Smoking cessation is associated with a mean increase of 4-5 kg in body weight after 12 months of abstinence
- Most weight gain occurs within three months of quitting.
- Variation in weight change is large, with about 16% of quitters losing weight and 13% gaining more than 10 kg.



Overview

- Quitters are known to be less concerned on average about weight gain than continuing smokers, particularly in the case of women
- A primary motivation for quitting smoking is general concern about health
- Quitters are more future-oriented on average
- Quitters are less impulsive on average

Weight gain in pregnancy

- Women who quit smoking gained, on average, 15.3 kg (SD 4.4) during pregnancy
- Non-smokers gained 14.1 kg (SD 4.0) and smokers gained 13.8 kg (SD 4.3).
- Quitters gained significantly more weight than both non-smokers and smokers ($p < 0.001$).
- Quitters also adopted healthier eating habits (e.g. improvement in their breakfast quality).

What is the cause of weight gain?

Hypotheses

- Restrained eating vs unrestrained (likely)
- Negative affect eating (likely)
- Disinhibited eating (likely)
- Hypoglycemia (possible)
- Hypothyroidism (unusual but possible)

Dieting at the same time

- Individuals who received either an individualized diet plan intervention or general nutritional educational treatment combined with smoking cessation counseling had higher smoking rates at follow-ups compared with a group receiving only smoking cessation counseling.
- An inpatient research ward demonstrated that patients smoked 8% more cigarettes while on a 6-day low-calorie diet compared to smokers on a 6-day normal calorie diet.

Self-control

Two seemingly unrelated tasks that demand inhibition (or self control) can affect one another because they both require and deplete the same self-control strength or resource in the brain.

Good evidence suggesting NOT to do “two things” at once.

A Nicotine effect?

- Nicotine gum as well as other forms of NRT have been shown to attenuate post-cessation weight gain
- Chronic lower weight of smokers might be due to repeated intake of nicotine, the lowering of weight “set point” or edge of hyperthyroidism.
- Nicotine's hypophagic effect is associated with increased 5HT (Serotonin) and DA (Dopamine)

The Thyroid Glands

- Thyroid hormones have long been associated with weight changes, learning and memory, with thyroid hormone deficiencies in early life (including neonates) leading to long term weight concerns as well as deficits in cognition
- More recent animal studies have shown that thyroid hormone signalling also contributes to both long- and short-term synaptic plasticity.
Thus thyroid hormones are vital to normal weight control and cognitive functioning
- There is a strong association between Graves disease (a type of severe hyperthyroidism) and cigarette smoking, there are 2 theories about this association
 - A. Smoking directly causes an increase in thyroid secretion, directly leading to the hyperthyroid state
 - B. Smoking decreases thyroid secretions and individuals with Graves disease smoke in an effect to self-medicateBoth theories have a variety of supporting references

- Common symptoms of nicotine withdrawal including weight gain, lack of concentration, depression, constipation and anxiety which mimic symptoms of hypothyroidism, and are thus commonly over -looked in patients during cessation attempts
- The mechanisms connecting smoking cessation, thyroid autoimmunity and thyroid function are currently poorly understood
- Altering smoking cessation practitioners to this association is important to allow for monitoring of TSH levels in their patients, especially those with a history of weight gain and/or a family history of hypothyroidism

Hypoglycemia

- Blood sugar rises with a cigarette and declines with the decay of nicotine
- Low blood sugar → ↑ appetite
- Diabetics at risk of fluctuating blood sugars
- Sugar intake goes up as smoking prevalence goes down

Hypoglycemia Continued

- Placebo control sugar study for tobacco withdrawals
- Patients given Placebo or Glucose
- Placebo had more withdrawals and put on weight
- Glucose patients had less withdrawals and less weight gain
- Recommend “jelly beans” for urges to smoke?

Recommendations

- Clinical tobacco treatment practice guidelines recommend that individuals concentrate on smoking cessation rather than caloric restriction until they are confident that they will not relapse
- Concurrent dieting may undermine attempts to quit smoking.
- Be alert to substantial weight gain and refer on if it persists

No Evidence

- That smoking increases “your metabolism”
- That weight gain does you harm!

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