



The Obesity Paradox

Survival benefit... or statistical fallacy?

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Weight Neutral vs Weight Centric Healthcare

Intentional weight loss

- *Weight or body shape change IS a goal of treatment*
- *Strategies to reduce energy intake*
- *Strategies to increase energy expenditure*

Weight Neutral Approaches

- *Weight or body shape change is NOT a goal of treatment*
- *Increased awareness of body cues*
- *Mindful eating*
- *Encouragement of healthy eating*
- *Encouragement of physical activity*
- *Body acceptance*

Assumptions of weight loss recommendations

- Weight loss is achievable and sustainable
- Current weight defines health risk
- Weight loss in an innocuous activity

For the majority of people long-term weight loss is not an achievable goal!

LONG-TERM WEIGHT MANAGEMENT

How effective are lifestyle interventions in maintaining weight loss in adults?

Weight loss following lifestyle intervention is maximal at 6–12 months. Regardless of the degree of initial weight loss, most weight is regained within a 2-year period and by 5 years the majority of people are at their pre-intervention body weight.

A

Evidence base

A

Consistency

B

Clinical impact

A

Generalisability

A

Applicability

A

REFERENCES: Dansinger et al. 2007; Schmitz et al. 2007; Stahre et al. 2007; Cussler et al. 2008; Martin et al. 2008; Svetkey et al. 2008; Cooper et al. 2010; Neve et al. 2010

Individuals who formerly had obesity are metabolically different

- "Evidence suggests that these biological adaptations often persist indefinitely, even when a person re-attains a healthy BMI via behaviourally induced weight loss... Thus, we suggest that few individuals ever truly recover from obesity; individuals who formerly had obesity but are able to re-attain a healthy bodyweight via diet and exercise still have 'obesity in remission' and are biologically very different from individuals of the same age, sex, and bodyweight who never had obesity"
- ***Ochner et al, The Lancet, April 2015***

The potential harms of weight loss

- Disordered eating (Fairburn & Harrison, 2003)
- Anxiety and depression (French & Jeffery, 1994)
- Weight gain above pre-intervention weight (Fildes et al., 2015)
- Potential for delayed diagnosis
- Working memory impairment (Green 2011)
- Chronic Dieting Syndrome (Grodner 1992, Ogden 2010)

Assumptions of weight loss research

- Health benefits result from weight loss not the interventions used to achieve weight loss even though some health benefits persist after the weight is regained
- Weight loss is achievable and sustainable
- High drop out rates in obesity studies (up to 48%) are acceptable

Paradox: (fr Gk. *Paradoxus*, something contrary to what is expected) a statement that is seemingly contradictory or opposed to common sense and yet is perhaps true.

(Merriam Webster's Collegiate Dictionary)

3 paradoxes for the price of 1

That's right you've been up-sized!

- ***The Classic*** - *The paradoxical benefits of obesity in surgical populations.*
- ***The Big Deal*** – *Being overweight has been found to be associated with significantly lower all-cause mortality*
- ***The Takeaway*** - *Healthy lifestyle habits are associated with a significant decrease in mortality regardless of baseline body mass index*

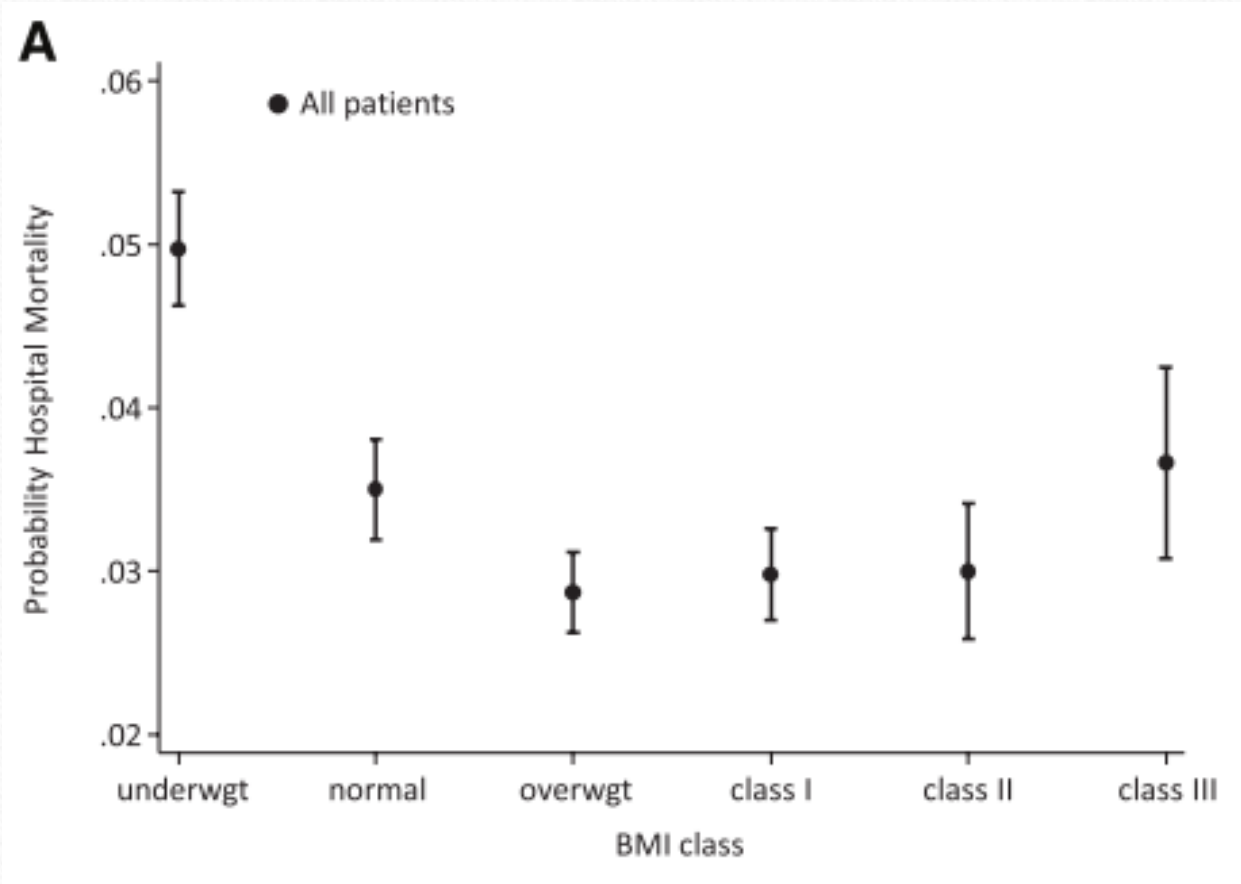
The Classic - The paradoxical benefits of obesity in surgical populations

Body Mass Index and Mortality Among Adults Undergoing Cardiac Surgery A Nationwide Study With a Systematic Review and Meta-Analysis

(Mariscalco et al., 2017)

- N = 401 227 adult patients and a systematic review of 557 720 patients from 13 countries
- Demonstrated that overweight and obese patients had improved outcomes after cardiac surgery compared with normal weight patients.
- Subgroup and sensitivity analyses for likely sources of bias and confounding did not affect estimated reductions in mortality with increasing levels of obesity.

Body Mass Index and Mortality Among Adults Undergoing Cardiac Surgery A Nationwide Study With a Systematic Review and Meta-Analysis (Mariscalco et al., 2017)

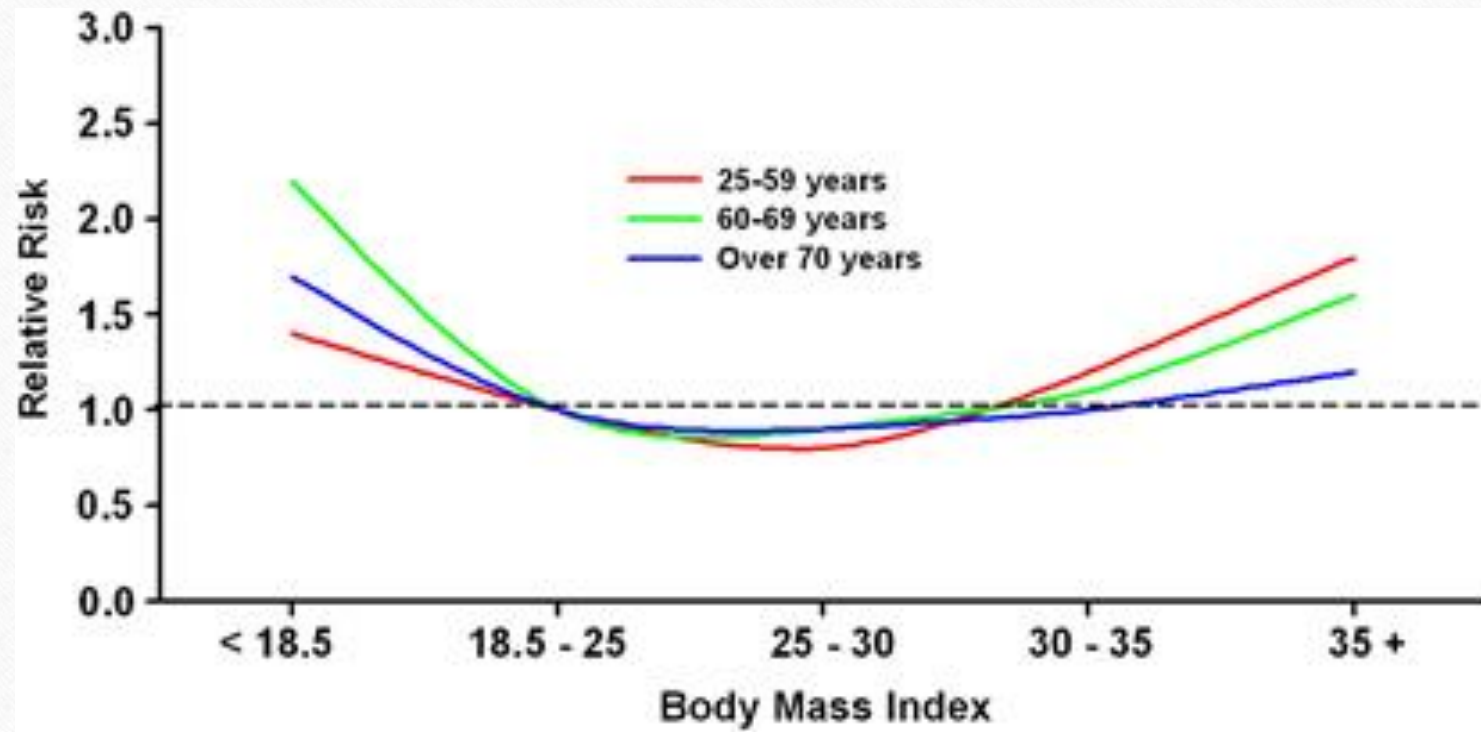


Other manifestations of obesity paradox

(Hainer & Aldhoon-Hainerová, 2013)

-
- Peripheral arterial disease
 - Stroke
 - Thromboembolism
 - Postoperative complications in patients after cardiac surgery
 - Complications during catheter ablation for atrial fibrillation
 - In-hospital mortality in surgical intensive care unit
 - Type 2 diabetes
 - Mortality in patients undergoing non-bariatric general surgery
 - Amputation risk among non-elderly diabetic men
 - Chronic obstructive pulmonary disease and its acute exacerbation
 - Hemodialysis patients
 - Critically ill patients
 - Osteoporosis

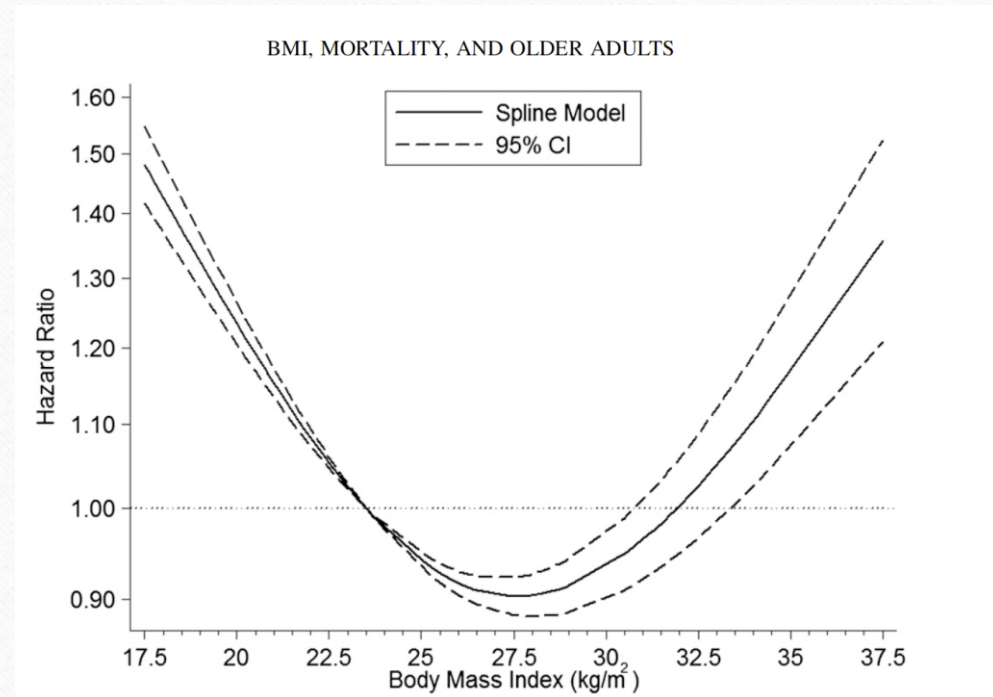
The Big Deal – Being overweight has been found to be associated with lower all-cause mortal
(Flegal, Kit, & Orpana, 2015)



The evidence is even more convincing in people over 65 years

BMI and all-cause mortality in older adults: a meta-analysis

(Hainer & Aldhoon-Hainerová, 2013)



Current changes to practise in Queensland

Therefore, in practice, it may be appropriate to adjust BMI classifications for people aged ≥ 65 years to:

- Underweight $<23 \text{ kg/m}^2$
- Healthy weight $24\text{-}30 \text{ kg/m}^2$
- Overweight $>30 \text{ kg/m}^2$

CAUTION: Intentional weight loss should only be considered for elderly people on an individual basis with careful attention to maintenance of lean mass



Using BMI in older adults ≥ 65 years

There are no existing evidence-based practice guidelines to assist clinicians in classifying BMI for elderly populations. However, there is strong emerging evidence that WHO cut-offs may not be appropriate in increasing age.

Recent meta-analysis of 32 cohort studies⁴ (level II and III, $n=197940$) of community-dwelling elderly people aged ≥ 65 years found a U-shaped association between all-cause mortality, with mortality risk lowest at BMI $24 - 31 \text{ kg/m}^2$. This relationship remained when adjusting for smoking status, early death, pre-existing disease and geographical location.

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CAUTION: Intentional weight loss should only be considered for elderly people on an individual basis with careful attention to maintenance of lean mass (particularly where co-morbidities are present which

may compromise nutritional status and/or muscle mass). The above recommendations are supported by the Australia & New Zealand Society for Geriatric Medicine⁸.

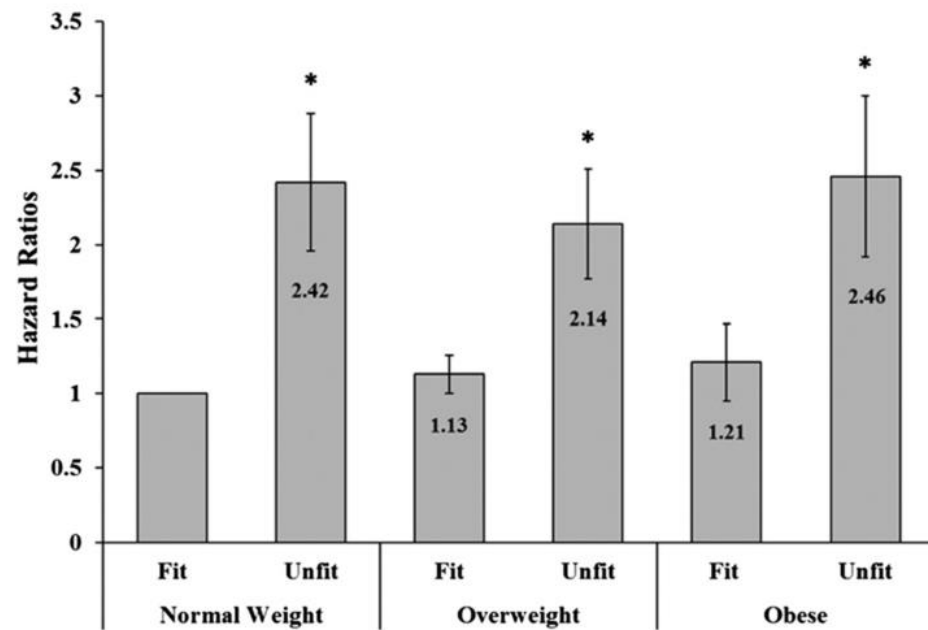
Using BMI in ethnic groups⁹

While there is some evidence that BMI differs according to ethnicity, WHO maintains that these cut-offs are not significantly different and, therefore, the standard WHO BMI classifications should be used in Asian, African American and Polynesian populations.

Limitations associated with BMI³

- Fat mass is not distinguished from lean body mass, and may be underestimated for older adults, and overestimated for those with a muscular build (e.g. athletes)
- Fat distribution and physical disabilities are not taken into account
- There is a reliance on the accuracy of reported height
- Affected by shifts in fluid weight
- BMI is influenced by age and gender
- Not suitable for pregnant women and children

The Takeaway – Health behaviours are associated with decreased mortality regardless of BMI



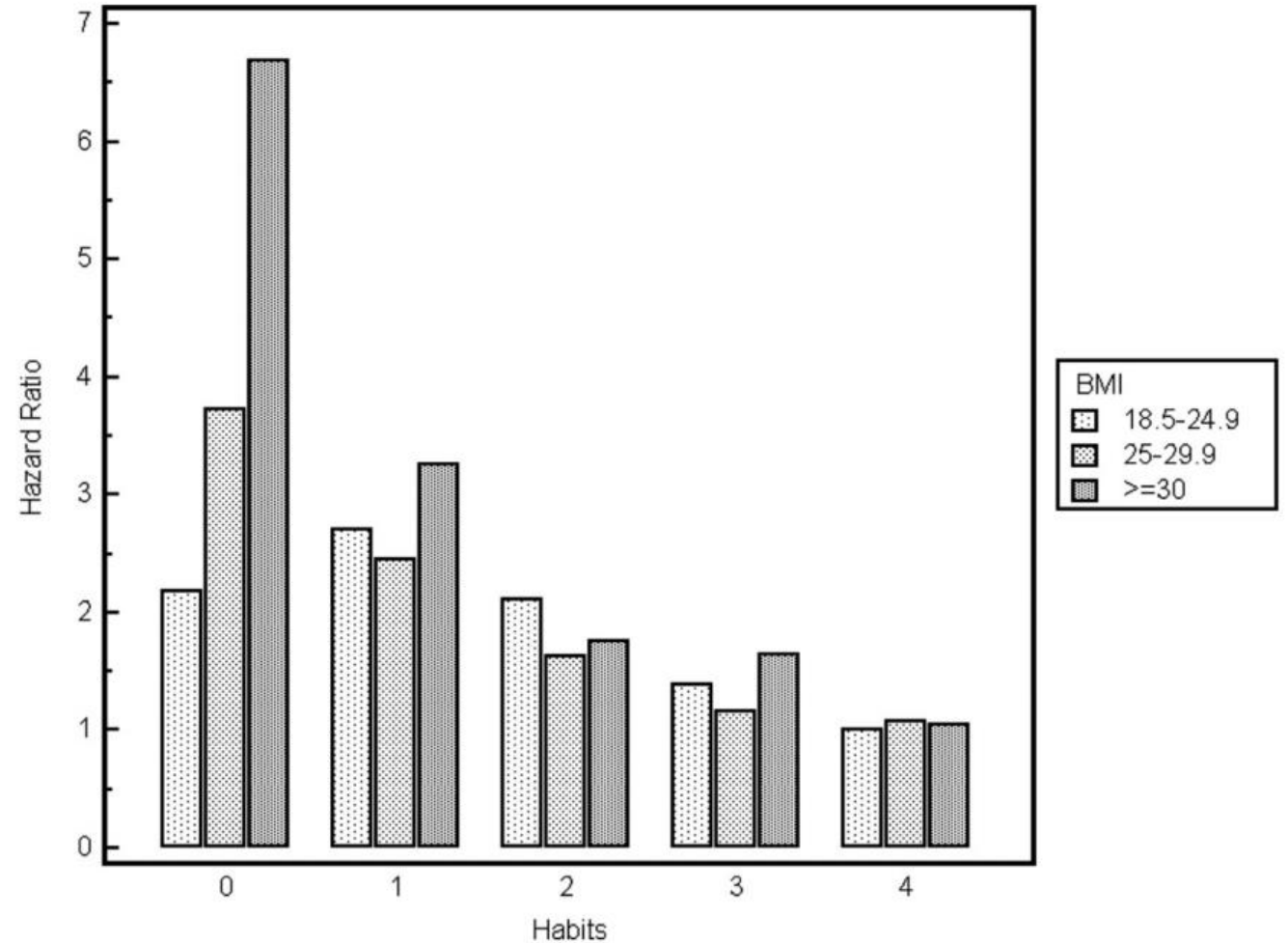
Fitness versus fatness: Which influences health and mortality risk the most?

Gaesser, Tucker, Jarrett & Angadi, (2015)

Hazard ratio for all-cause mortality by BMI and number of health-behaviours

Matheson, King & Everett (2012)

- Fruits and vegetables
- Not smoking
- Moderate physical activity
- Moderate alcohol intake



What is Agreed



At a population level extreme BMI both high and low is associated with a higher risk of mortality

But a deeper dive into the
data...



Shows that the relationship between weight and health is as complex and nuanced as the individual it bodies it attempts to represent.

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