Nature Reviews Cardiology **12**, 560 (2015); published online 25 August 2015; doi:10.1038/nrcardio.2015.128

RISK FACTORS

CVD RISK AND THE 'OBESITY PARADOX'

The relationship between body mass index (BMI) and the risk of cardiovascular disease (CVD) is complex. Increasing evidence suggests that being overweight or obese might, counterintuitively, be associated with a reduced CVD risk compared with individuals classified as being of normal weight, and that those who are underweight are at the highest risk of cardiovascular events. This phenomenon has been termed the 'obesity paradox'.

Researchers set out to clarify the interaction between BMI and CVD risk, and to investigate the effect of optimal medical therapy (OMT) on the relationship. A total of 54,285 patients with, or at high risk of, atherosclerosis were followed up for 4 years in the international, prospective REACH cohort. Of these patients, 9,779 were receiving primary prevention, and 44,506 were receiving secondary prevention. During follow-up, 6,036 fatal or nonfatal cardiovascular events occurred. A total of 2,543 cardiovascular and 4,706 all-cause deaths were recorded.

The relationship between BMI and incidence of CVD, cardiovascular mortality, or all-cause mortality was described as a 'reverse J-shaped curve', regardless of whether individuals were receiving primary or secondary prevention. Individuals who were underweight had markedly increased cardiovascular risk, whereas those who were either overweight or obese had the lowest mortality and rate of cardiovascular events.

As expected, OMT (the use of four classes of cardioprotective medications: statins, angiotensin-converting-enzyme inhibitors or angiotensin II-receptor blockers, β-blockers, and antiplatelet agents) improved outcomes in patients receiving secondary prevention. Although obesity was associated with increased use of cardioprotective drugs and OMT, the reverse J-shaped relationship between BMI and CVD persisted among all those receiving optimal secondary prevention therapy. Underweight patients were still at highest risk, and those who were overweight or obese seemed to be protected against cardiovascular events and cardiac and all-cause death. The investigators conclude that "at extremes of BMI, further interventions beyond OMT may be needed to reduce cardiovascular risk".

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Original article Hansel, B. *et al*. Cardiovascular risk in relation to body mass index and use of evidence-based preventive medications in patients with or at risk of atherothrombosis. *Eur. Heart J.* doi:10.1093/eurheartj/ehv347