Body–mass index as a robust predictor of mortality in Asian Indians


SUMMARY
This study from the Prospective Studies Collaboration (PSC) is a meta-analysis of individual-level information shared by investigators of 57 primary prospective cohort studies to examine the relationship of body–mass index (BMI) with overall and cause-specific mortality. The primary studies had followed adult subjects, whose baseline blood pressure, blood cholesterol and BMI values had been recorded for 5 years or longer. In these 57 studies, individual records with information about BMI were available for 894 576 adults, 92% of whom were in Europe, Israel, USA or Australia; the remaining adults were from Japan. Eighty-five per cent of participants (763 274) were recruited during the 1970s and 1980s, with median recruitment year being 1979. The participants had a median recruitment age of 46 years, a slight predominance (61%) of men, and mean BMI of 24.8 kg/m². The mean BMI at baseline was greatest for persons 50–69 years of age for both sexes, and in the US and Australian studies (25.6 kg/m²) than in European or Israeli studies (24.7 kg/m²). The mean BMI at baseline was on an average associated with at least 5 mmHg (men 5.8 mmHg; women 5.2 mmHg) higher systolic blood pressure (SBP) and about 4 mmHg (men 4.9 mmHg, women 3.3 mmHg or higher) higher diastolic blood pressure (DBP). Up to 30 kg/m², BMI was inversely associated with high density lipoprotein (HDL) cholesterol (men 0.16 mmol/L and women 0.14 mmol/L lower per 5 kg/m²) and strongly positively with the ratio of non-HDL to HDL cholesterol (men 0.85 and women 0.54 higher ratio per 5 kg/m²). BMI also showed positive association with diabetes, and inverse correlation with smoking and alcohol intake.

Overall mortality was lowest at BMI of 22.5–25 kg/m² for both sexes and at all ages. Above this range, increasing BMI was associated with increased overall mortality. BMI showed a positive association with mortality due to specific causes such as ischaemic heart disease, stroke, diabetes and liver disease, and negative association with none of the cause-specific mortality rates. Thus, in the BMI range of 25–50 kg/m², each 5 kg/m² higher BMI was on an average associated with about 30% higher overall mortality (hazard ratio per 5 kg/m² [HR] 1.29 [95% CI 1.27–1.32]), 40% for vascular mortality (HR 1.41 [1.37–1.45]) including both ischaemic and stroke, 60%–120% for diabetic, renal and hepatic mortality (HRs 2.16 [1.89–2.46], 1.59 [1.27–1.99] and 1.82 [1.59–2.09], respectively), 10% for neoplastic mortality (HR 1.10 [1.06–1.15]) and 20% for respiratory (mainly chronic obstructive pulmonary disease) and other mortalities (HRs 1.20 [1.07–1.34] and 1.20 [1.16–1.25], respectively). Below the range of 22.5–25 kg/m², BMI was associated inversely with overall mortality. This increase in mortality with lower BMI was related to strong inverse associations of BMI with respiratory disease and lung cancer, and was more marked for smokers than for non-smokers.

One of the strengths of this study is the consideration of the confounding factors that may distort the association observed between body weight and mortality. The study appropriately adjusted for confounders such as age, sex and smoking and also rightly, not adjusted for physiological effects of excess body fat through which excess BMI affects the outcome.

In conclusion, this study showed that BMI is a strong predictor of overall mortality, with excess mortality both above and below the apparent optimum of 22.5–25 kg/m². At higher BMI, the increase in mortality progressively increases, is related largely to increased vascular disease and appears to be causal. BMI of 30–35 kg/m² is associated with reduction in median survival by 2–4 years, and that of 40–45 kg/m² with a reduction by 8–10 years. The excess mortality below 22.5 kg/m² is mainly due to smoking-related diseases; the reason for this increase remains unclear.

COMMENT
Overweight and obesity have been established as major causes of several disease conditions which can be fatal.1 With increasing prevalence of obesity and changes in lifestyle, it is important to define cut-off levels for obesity for each ethnic group. The findings of this study have implications for the control of non-communicable diseases (NCDs). Considering that 10% of women and 9% of men in India in the age group of 15–49 years are overweight (BMI 25–29.9 kg/m²) and 3% of women and 1% of men are obese (BMI ≥30 kg/m²),2 it is imperative to take a cue from this study towards the control of NCD in India.3

Using a screening tool such as BMI to identify at-risk individuals and referring them for preventive intervention could translate into...
an effective public health approach to contain the epidemic of NCD. However, we need to review a few issues. First, is BMI an appropriate indicator of obesity in Asians? Interpretation of BMI grading in relation to risk differs for different populations. Since BMI essentially estimates both fat and fat-free mass (bone, muscles and body water) it fails to distinguish between fat and fat-free mass. Moreover, some characteristics of Asians such as short stature, stunting of growth and malnutrition may alter appropriateness of assessing the relationship between height, weight and body composition. A consensus statement was proposed on the diagnosis of obesity, abdominal obesity and metabolic syndrome in Asian Indians after consultations with experts from various regions of India belonging to different medical disciplines. This statement gives equal importance to BMI and waist circumference for the diagnosis of NCD. However, we need to review a few issues. First, is BMI an appropriate indicator of obesity in Asians? Interpretation of BMI grading in relation to risk differs for different populations. Since BMI essentially estimates both fat and fat-free mass (bone, muscles and body water) it fails to distinguish between fat and fat-free mass. Moreover, some characteristics of Asians such as short stature, stunting of growth and malnutrition may alter appropriateness of assessing the relationship between height, weight and body composition.

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The aim of the PSC study was to examine the relevance of BMI to cause-specific mortality ≥5 years after recruitment to those studies. The PSC study reported that BMI is associated with increased total mortality in both men and women, and in all age strata from 35 to 89 years. The findings of the PSC study are important. However, formulation of BMI-based mortality risk for India needs to be informed by geographically representative community-based studies across the country, including follow up studies or the morbidity and mortality outcomes. We believe that measuring BMI is more feasible at a health facility (sub-centre, primary health centre, community health centre and district hospital) and WC at the community level. Such data generated from India would better inform policy-makers and thus help strategically improve the implementation of the NCD programme.

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Neuraminidase inhibitors for influenza in healthy adults: What we don’t know

Jefferson T, Jones M, Doshi P, Del Mar C. (Acute Respiratory Infections Group, Cochrane Collaboration, Rome, Italy; University of Queensland, School of Population Health, Brisbane, Australia; Program in History, Anthropology, Science, Technology and Society, Massachusetts Institute of Technology, Cambridge, MA, USA; Faculty of Health Sciences and Medicine, Bond University, Gold Coast, Australia.) Neuraminidase inhibitors for preventing and treating influenza in healthy adults: Systematic review and meta-analysis. BMJ 2009;339:b5106.

SUMMARY
The authors systematically reviewed and did a meta-analysis of studies that evaluated the efficacy of neuraminidase inhibitors (inhaled zanamavir and oral oseltamivir) for treatment of laboratory-proven cases of influenza, and pre- and post-exposure prophylaxis. Four studies which assessed the efficacy for preventing influenza were included in the study. Two of the 4 studies used oral oseltamivir 75 mg daily while 2 studies used inhaled zanamavir 10 mg daily. The authors found that the current evidence neither supports nor refutes the use of neuraminidase inhibitors for the prophylaxis of influenza (risk ratio 1.28 [CI: 0.45–3.66] for oseltamivir and 1.51 [0.77–2.95] for zanamavir).