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Title: Smoking and metabolic syndrome

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Body: Background: Smoking causes inflammation and chronic systemic inflammation predisposes to a range of metabolic disorders usually described as metabolic syndrome. This might likely be one pathway leading to cardiovascular disease. Nicotine reduces appetite. Therefore exact control of caloric uptake (and physical activity) is necessary when studying the association between smoking and metabolic syndrome. Methods: We used data collected during preventive check-ups among 987 employees of a large bank. Health data including routine laboratory parameters were enhanced by a detailed nutritional recall protocol and a standardised physical activity questionnaire. Physical activity and calories uptake were indeed significant predictors of several metabolic outcomes thus proving the data reliability. Associations were investigated using linear regression. Results: Current smoking (number of cigarettes currently smoked) showed a non-linear association with most outcomes including waist circumference, high density lipids, fasting glucose, and triglycerides: While moderate smoking did not differ significantly from non-smoking the daily consumption of more than 20 cigarettes lead to significantly adverse effects on all these parameters. Adverse effects were more pronounced and roughly linear when cumulative smoking (pack years) was considered. Smoking also lead to an increase in white blood cell counts indicating an inflammatory response.