Associations between smoking, nutritional status and clinical outcome following acute illness

Salah Gariballa and Sarah Forster

[1]*United Arab Emirates University, Al-Ain, United Arab Emirates and* [2]*University of Sheffield, Sheffield, UK*

Although smokers have poor health and consequently poor dietary intake compared with non-smokers no study has examined the effects of smoking on nutritional status during acute illness[1–3]. The aim of the present study was to measure the effect, if any, of smoking on nutritional status in unselected patients who were hospitalized. A randomly-selected group of 434 patients had their nutritional status assessed from anthropometric, haematological and biochemical data within 72 h of admission and at 6 weeks in hospital or at home for those discharged earlier. Nutritional status was compared between current smokers, ex-smokers and those who never smoked. Using multiple logistic regression analysis the association between smoking and nutritional status and mortality respectively were determined after adjusting for poor prognostic indicators including age, disability, chronic illness, medications and tissue inflammation.

After adjusting for age, disability and co-morbidity in a multivariate analysis, smoking status had a significant and independent effect on important anthropometric and biochemical nutritional assessment variables (Table). For example, being a current smoker was associated with lower body weight, mid-upper arm circumference and plasma vitamin C concentration by 2.5 kg, 0.87 cm and 3.8 μmol/l respectively compared with those patients who never smoked. Logistic regression analysis showed that smoking and increasing age were significantly and independently related to 1-year mortality (OR 1.70 (95 % CI 1.00, 2.87) and 3.50 (95 % CI 1.52, 8.22) respectively). The patients who smoked or were currently smoking at the time of hospital admission had a significantly higher risk of dying within 1 year compared with those who never smoked (Figure).

	Body weight (kg)		MUAC (cm)		Albumin (g/l)		Vitamin C (μmol/l)	
	r	95 % CI	r	95 % CI	r	95 % CI	r	95 % CI
Age	− 4.9*	− 7.6, − 2.1	− 2.0*	− 2.7, − 1.2	− 1.5*	− 2.3, − 0.7	− 4.4	− 9.2, 41
Barthel score	1.4	− 2.4, 5.3	0.43	− 0.5, 1.3	2.5*	1.5, 3.5	5.6	− 0.4, 11.5
Chronic disease	0.05	− 0.9, 1.0	− 0.02	− 0.2, 0.3	0.2	− 0.1, 0.5	0.3	− 1.3, 2.0
Medications	− 0.05	− 1.3, 0.3	− 0.14	− 0.3, 0.1	0.04	− 0.1, 0.3	0.8	− 0.5, 2.1
Smoking	− 2.5*	− 4.5, − 0.6	− 0.87*	− 1.4, − 0.4	− 0.38	− 0.9, 1.9	− 3.8*	− 7.1, − 0.5
CRP	2.9*	0.1, 5.8	− 0.02	− 0.7, 0.8	− 3.7*	− 4.6, − 2.9	− 6.5*	− 12, − 1.5

CRP, C-reactive protein; MUAC, mid-upper arm circumference. *$P < 0.05$.
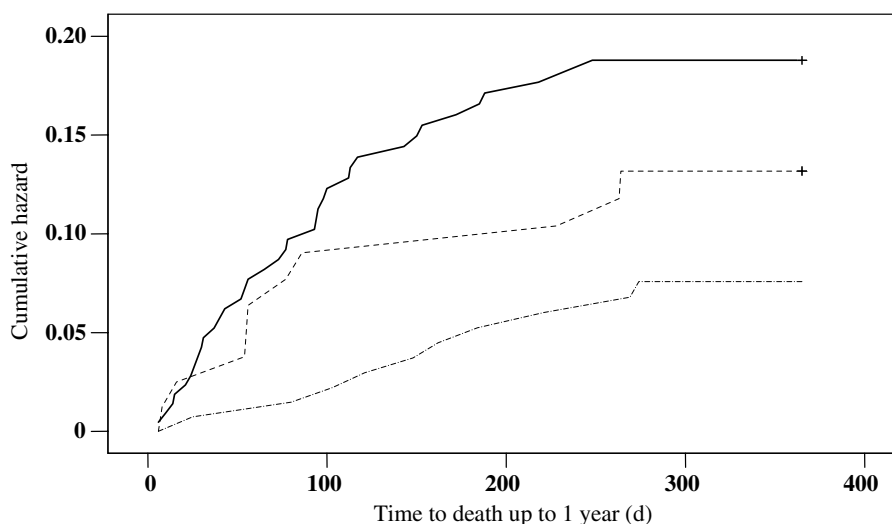

Figure. The 1-year hazard of death (Kaplan-Meier) according to smoking status on admission. (——), Ex smokers; (– – –), current smokers; (–.–.–), never smoked. $P = 0.013$.

In conclusion the study shows that subjects who smoked have a poor nutritional status compared with those who never smoked and that smoking is significantly and independently associated with a poor clinical outcome following acute illness.

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