To the Editor:

We read with interest the article by Mnatzaganian et al (1), who reported that being overweight and reporting physical activity increased the risk of total joint replacements (TJR) but a strong inverse dose-response relationship of duration of smoking and TJR existed, although the mechanisms behind this were unclear. We acknowledge that the association between smoking and arthritis is unclear and the authors highlight that more research is needed to understand the pathways for selection of patients for TJR, however we believe that the authors have not discussed other relevant issues that may have impacted on the numbers of TJR.

Recently, Hui et al (2) demonstrated in a meta-analysis that the protective effect of smoking in osteoarthritis, which has been observed in epidemiological studies, is likely to be false, as a result of selection bias. Their results suggested that the use of a hospital setting was a source of study bias. Previous work has also demonstrated that the willingness to consider total joint arthroplasty (TJA) is a strong predictor of when a TJA is undertaken. Willingness has been shown to be associated with patient perceptions of the risks of TJA and the perception of the indications for a TJA (3). However when willingness is removed from the model, education level was the primary factor influencing undergoing a TJA (3). It has also been shown that those with lower education and/or income were less likely to have TJR and that there are racial and ethnic disparities in the receipt of a TJR (4,5). While these studies were undertaken in North America, it is also likely that similar conditions exist in Australia.

Variability in physicians relating to the indications for TJR has been shown to exist (6). While the authors highlighted a survey of orthopaedic surgeons, which demonstrated that smoking did not influence the decision to conduct a joint replacement, it has been shown by Singh et al (7) that smoking at the time of elective TJR was associated with an increased level of postoperative complications. Thus initial referral of patients to orthopaedic surgeons may not occur, particularly if patients are known to be smokers. There is also evidence to suggest that appropriate candidates for joint surgery do not have the procedure done. This may be due to health system restraints such as waiting lists and access to surgical resources, or a lack of postoperative assistance and support (8). Smokers may be impacted by long waiting lists which would then limit the number of smokers undertaking a TJR.

The authors indicate that the data include arthroplasties from both public and private hospitals in Australia. Data from the Australian Orthopaedic Association National Joint Replacement Registry demonstrate that, despite the presence of universal health care in Australia, the majority (over 60%) of TJR are performed in private hospitals (requiring patients to have access to private health insurance) (9). Generally, it is considered that those of higher socioeconomic status have access to private hospital care; these are also the patients with lower levels of co-morbidities and lower levels of smoking.

Smokers are more likely to be from lower socioeconomic groups (10) and these are also groups which have a lower level of health literacy (11). It may be that those who smoke are less willing to undertake a TJR and are impacted more strongly by factors highlighted by Hawker (12) such as sociodemographic factors, health beliefs, lack of community and family support, lack of resources and clinician characteristics.
Thus we would argue that there is not a direct dose-response relationship between smoking and TJR.


11. Barber MN, Staples M, Osborne RH, Clerehan R, Elder C, Buchbinder, R. Up to a quarter of the Australian population may have suboptimal health literacy depending upon the measurement tool: Results from a population-based survey. Health Promot Int 2009;24:252-261.


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